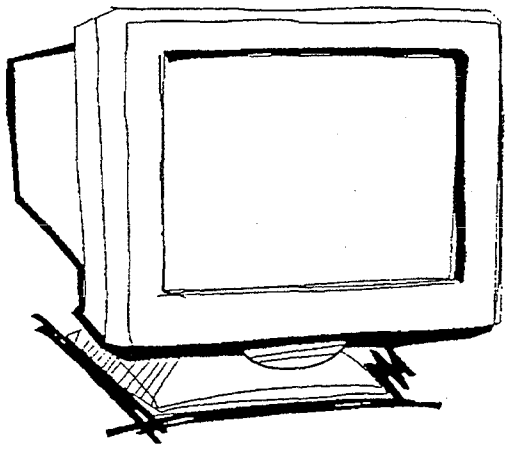
CPS-1760LR

TROUBLESHOOTING GUIDE



The Monitor Specialists

CTX Chuntex Electronic Co.,Ltd.

EDITION 1
Dec. 1993

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1. TIMING MODE SUPPORTED

The CPS-1760/LR monitor was Pre-set the following mode on channel 0~9 and 11~14 .

MODE	1		2		3		4		5		6		7	
NAME	VGA-350		VGA-400		VGA-480		SVGA I		8514A		8514NI		VESA 1024	
PIXEL RATE	25.2 MHZ		25.2 MHZ		25.2 MHZ		36.0 MHZ		44.9 MHZ		65.0 MHZ		75.0 MHZ	
Fh	31.5 KHZ		31.5 KHZ		31.5 KHZ		35.156 KHZ		35.522 KHZ		48.363 KHZ		56.476 KHZ	
Fv	70 HZ		70 HZ		60 HZ		56.250 HZ		86.957 HZ		60.004 HZ		70.069 HZ	
INTERLACE MODE	NO		NO		NO		VIDEO		VIDEO		NO		NO	
OUTPUT	ANALOG		ANALOG		ANALOG		ANALOG		ANALOG		ANALOG		ANALOG	
FULL SCALE Vpp	1,000		1,000		1,000		1,000		1,000		1,000		1,000	
SYNC ON R/G/B	NO		NO		NO		NO		NO		NO		NO	
CONTROL BITS	0000 0000		0000 0000		0000 0000		0000 0000		0000 0000		0000 0000		0000 0000	
UNIT	PIXEL	ms/us	PIXEL	ms/us	PIXEL	ms/us	PIXEL	ms/us	PIXEL	ms/us	PIXEL	ms/us	PIXEL	ms/us
FRAME BORDER-H	0	0.000us	0	0.000us	0	0.000us	0	0.000us	0	0.000us	0	0.000us	0	0.000us
FRAME BORDER-V	0	0.000ms	0	0.000ms	0	0.000ms	0	0.000ms	0	0.000ms	0	0.000ms	0	0.000ms
H TOTAL	800	31.78 us	800	31.78 us	1024	28.444us	1024	28.444us	1264	28.10 us	1344	20.677us	1328	17.707us
H DISPLAY	641	25.42 us	641	25.42 us	800	22.222us	800	22.222us	1024	22.80 us	1024	15.754us	1024	13.653us
H REAR PORCH	48	1.91 us	48	1.91 us	128	3.556us	128	3.556us	52	1.15 us	160	2.462us	144	1.920us
H SYNC WIDTH	96	3.81 us	96	3.81 us	72	2.000us	72	2.000us	176	3.91 us	136	2.092us	136	1.813us
H SYNC POLARITY	+		-		-		+		+		-		-	
V TOTAL	450	14.27 ms	450	14.27 ms	625	17.778ms	625	17.778ms	408	11.50 ms	806	16.667ms	806	14.272ms
V DISPLAY	350	11.12 ms	400	12.71 ms	600	17.067ms	600	17.067ms	384	10.80 ms	768	15.880ms	768	13.599ms
V REAR PORCH	60	1.91 ms	35	1.11 ms	22	0.626ms	22	0.56 ms	20	0.56 ms	29	0.600ms	29	0.513ms
V SYNC WIDTH	2	0.06 ms	2	0.06 ms	2	0.057ms	2	0.057ms	4	0.11 ms	6	0.124ms	6	0.106ms
V SYNC POLARITY	-		+		-		-		+		-		-	
EQUALIZATION ?	NO		NO		NO		NO		NO		NO		NO	
SERRATION ?	NO		NO		NO		NO		NO		NO		NO	
COMP SYNC POLARITY	-		-		-		-		-		-		-	

MODE	8		9		10		11		12		13		14	
NAME	SVGAII		SVGAIII		VESA-350		VESA-400		VESA-480		MACII		COLOR 64K	
PIXEL RATE	40.0 MHZ		50.0 MHZ		31.5 MHZ		36.0 MHZ		31.5 MHZ		36.4 MHZ		110.000 MHZ	
Fh	37.879 KHZ		48.077 KHZ		37.861 KHZ		37.815 KHZ		37.861 KHZ		35.0 KHZ		63.657 KHZ	
Fv	60.317 HZ		72.188 HZ		84.136 HZ		84.033 HZ		72.810 HZ		66.667 HZ		59.997 HZ	
INTERLACE MODE	NO		NO		NO		NO		NO		NO		NO	
OUTPUT	ANALOG		ANALOG		ANALOG		ANALOG		ANALOG		ANALOG		ANALOG	
FULL SCALE Vpp	1,000		1,000		1,000		1,000		1,000		1,000		1,000	
SYNC ON R/G/B	NO		NO		NO		NO		NO		G NO		NO	
CONTROL BITS	0000 0000		0000 0000		0000 0000		0000 0000		0000 0000		0000 0000		0000 0000	
UNIT	PIXEL	ms/us	PIXEL	ms/us	PIXEL	ms/us	PIXEL	ms/us	PIXEL	ms/us	PIXEL	ms/us	PIXEL	ms/us
FRAME BORDER-H	0	0.000us	0	0.000us	0	0.000us	0	0.000us	0	0.000us	0	0.000us	0	0.000us
FRAME BORDER-V	0	0.000ms	0	0.000ms	0	0.000ms	0	0.000ms	0	0.000ms	0	0.000ms	0	0.000ms
H TOTAL	1056	26.400us	1040	20.800us	832	26.413us	952	26.5 us	832	26.413us	1040	28.57 us	1728	15.625us
H DISPLAY	800	20.000us	800	16.000us	640	20.317us	720	20.02 us	640	20.317us	783	21.5 us	1306	11.875us
H REAR PORCH	88	2.200us	64	1.280us	128	4.063us	162	4.5 us	128	4.063us	116	3.2 us	220	2.00 us
H SYNC WIDTH	128	3.200us	120	2.400us	40	1.270us	45	1.25 us	40	1.270us	76	2.1 us	112	1.018us
H SYNC POLARITY	+		+		+		−		−		+		+	
V TOTAL	628	16.579ms	666	13.853ms	450	11.886ms	450	11.899ms	520	13.735ms	525	15.0 ms	1061	16.667ms
V DISPLAY	600	15.840ms	600	12.480ms	350	9.244ms	401	10.600ms	480	12.678ms	480	13.7 ms	1091	16.007ms
V REAR PORCH	23	0.607ms	23	0.478ms	62	1.638ms	37	0.981ms	28	0.740 ms	39	1.12 ms	37	0.581ms
V SYNC WIDTH	4	0.106ms	6	0.125ms	3	0.079ms	3	0.08 ms	3	0.079 ms	3	0.086 ms	5	0.079ms
V SYNC POLARITY	+		+		−		+		−		−		+	
EQUALIZATION ?	NO		NO		NO		NO		NO		NO		NO	
SERRATION ?	NO		NO		NO		NO		NO		NO		NO	
COMP SYNC POLARITY	−		−		−		−		−		−		−	

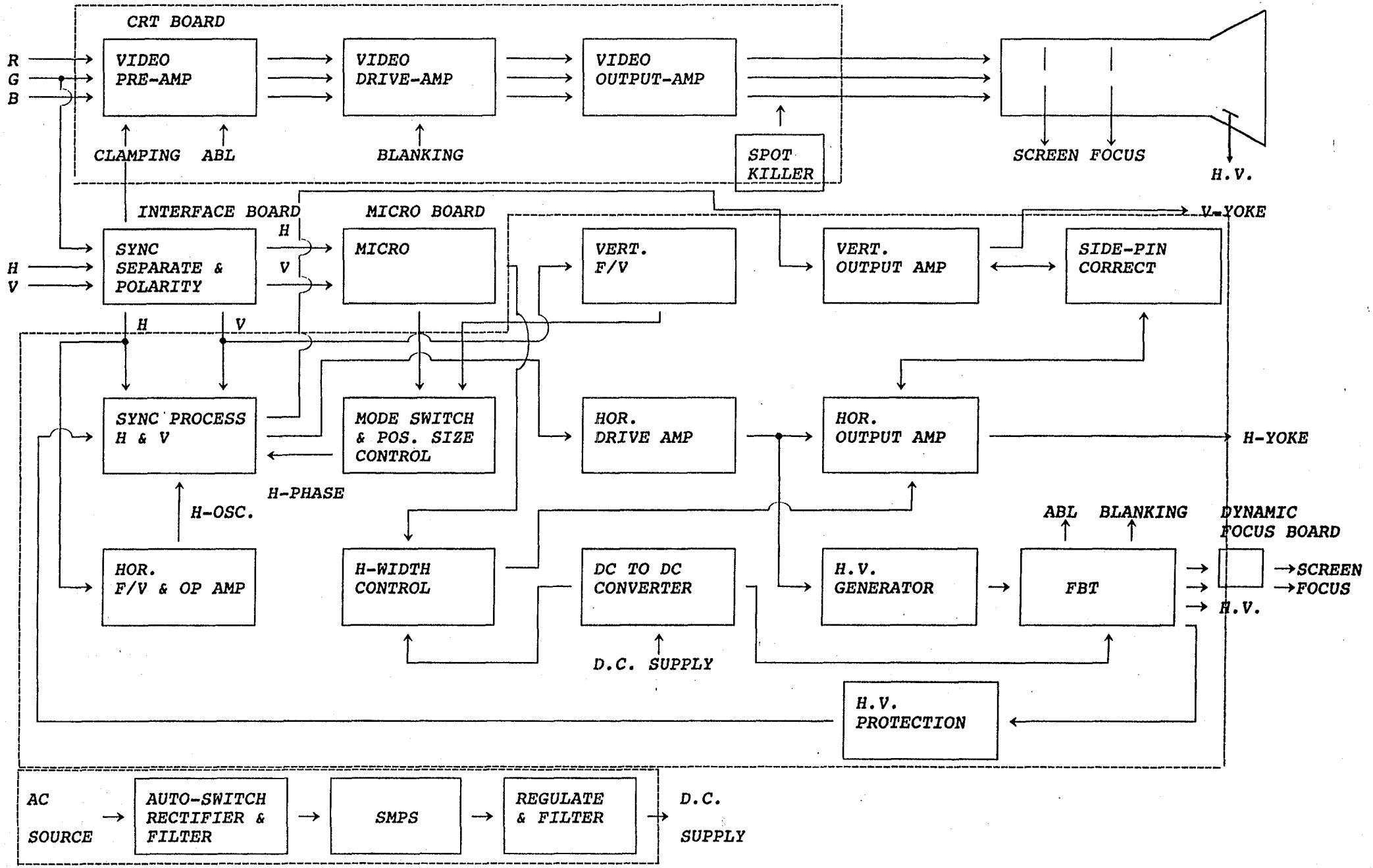
2. GUIDE OF SHOOTING

SYMPTOM		AREA	BLOCK OF BOARD	CAUSE	SUGGEST TO CHECK LOCATION
1	2				
NO DISPLAY	LED OFF	POWER BOARD			R129,Q101,IC101,BD101
		MAIN BOARD		IC 95V,215V ARE DROP DOWN BY OTHER CIRCUIT, THE LED IS OFF	Q412
	LED ON	MAIN BOARD	DC TO DC CONVERTER	B+ LOSS	Q110,Q112,C141
			FBT	BLANKING SIGNAL ABNORMAL	Q311,Q312
			H.V. GENERATOR	NO HI-VOLT	Q412
		INTERFACE BOARD	H.V. SYNC. PROCESSING	NO CLAMPING SIGNAL	IC702 (74LS136)
		MICRO BOARD	DRIVE STAGE	MUTE SIGNAL ABORMAL	Q502,Q501,Q531
		CRT BOARD	VIDEO PRE-AMP	IC601 FAIL	IC601
	LED FLASH (WITH AUDIO NOISE)	MAIN BOARD	HOR. OUTPUT AMP.	Q401 SHOT	Q401
			H.V. GENERATOR	Q412 SHORT	Q412
			DC TO DC CONVERTER	Q113 SHORT	Q113
	ONLY MACII MODE	INTERFACE BOARD	SYNC. ON G DETECTOR & AMP	NO SYNC. SIGNAL	IC701

SYMPTOM		AREA	BLOCK OF BOARD	CAUSE	SUGGEST TO CHECK LOCATION
1	2				
PICTURE	PICTURE SMALLER (BOTH H. & V.) WITH ASYCHROMOUS	INTERFACE BOARD	H.V. SYNC. PROCESSING, H.V. SYNC. POLARITY & AMP.	NO SYNC. INPUT	IC701
	HEIGHT INSUFFICENT	MAIN BOARD	MODE SWITCH & POS. SIZE CONTROL	V-SIZE VOLTAGE ABNORMAL	Q209
		MICRO BOARD	DRIVE STAGE		IC504 PIN 13,Q504
	VERT. CENTER LOSS	MAIN BOARD	MODE SWITCH & POS. SIZE CONTROL	V-POS. VOLTAGE ABNORMAL	Q210.Q211
		MICRO BOARD	MICROPROCESS OR IC505		
	VERT. ASYNCHRONOUS	MAIN BOARD	SYNC. PROCESSING H. & V.	V-OSC. FREQ ABNORMAL	IC305
			VERT. F/V		IC202
	ONE H-LINE ONLY	MAIN BOARD	VERTICAL YOKE	YOKE OPEN	VERTICAL YOKE OPEN
			VERT. OUTPUT AMP	NO VERT. DEFETIVE CURRENT	IC201
			VERT. BUFFER	NO VERT. DEFETIVE SIGNAL	Q201,Q202
			SYNC. PROCESSING H. & V.		IC305 PIN 16
PICTURE	WIDTH INSUFFICENT	MICRO BOARD	DRIVER STAGE, IC504,IC503	H-WIDTH SIGNAL ABNORMAL	IC504 PIN 15, Q505
		MAIN BOARD	MODE SWITCH & POS. SIZE CONTROL		Q416,RL402,Q402,RL001
			H-WIDTH CONTROL		Q305
	HOR. CENTER LOSS	MICRO BOARD	IC504,IC505	HOR. CENTER SIGNAL ABNORMAL	
		MAIN BOARD	MODE SWITCH & POS. SIZE CONTROL		Q301,Q302,Q314
	HOR. ASYNCHRONOUS	MAIN BOARD	HOR. F/V & OP AMP.	H. OSC FREQ. NOT MATCH	IC303,IC304
			SYNC. PROCESSING H. & V.		IC305
	ONE V-LINE ONLY	MAIN BOARD	H-YOKE	H-YOKE OPEN	HOR. YOKE
			HOR. OUTPUT AMP.	NO HOR. DEFIECTIVE CURRENT	Q401,L401,C310,C311

SYMPTOM	AREA	BLOCK OF BOARD	CAUSE	SUGGEST TO CHECK LOCATION
MISSING OF COLOR	CRT BOARD	VIDEO PRE-AMP VIDEO DRIVE AMP. VIDEO OUTPUT AMP.	ONE OF COLOR SIGNAL UNWORK	CHECK EACH OUTPUT OF STAGE PRIME PARTS ARE FOLLOWING: IC601 PIN 21,25,29 FOR R.,G.,B. Q612,613 AND Q621,622 FOR R. Q614,615 AND Q623,624 FOR G. Q616,617 AND Q625,626 FOR B.
COLOR RETUACE LINES APPEAR		VIDEO DRIVE AMP.	ONE OF VIDEO DRIVE AMP IS FAULT	R670,D602 FOR (R) R672,D604 FOR (G) R671,D603 FOR (B)
ABNORMAL BRIGHTNESS	CRT BOARD	CONTRAST	ABL SIGNAL ABNORMAL	R628
COLORS OF HORIZONTAL AND VERTICAL LINE ARE DEFFERENT		VIDEO PRE-AMP VIDEO DRIVE AMP. VIDEO OUTPUT AMP.	THERE IS DIFFERENCE GAIN OF COLOR	C625,C658 FOR (R) C630,C659 FOR (G) C641,C660 FOR (B)
POOR FOCUS	DYNAMIC FOCUS BOARD	OUTPUT	Q801,Q802 FAIL	Q801,Q802

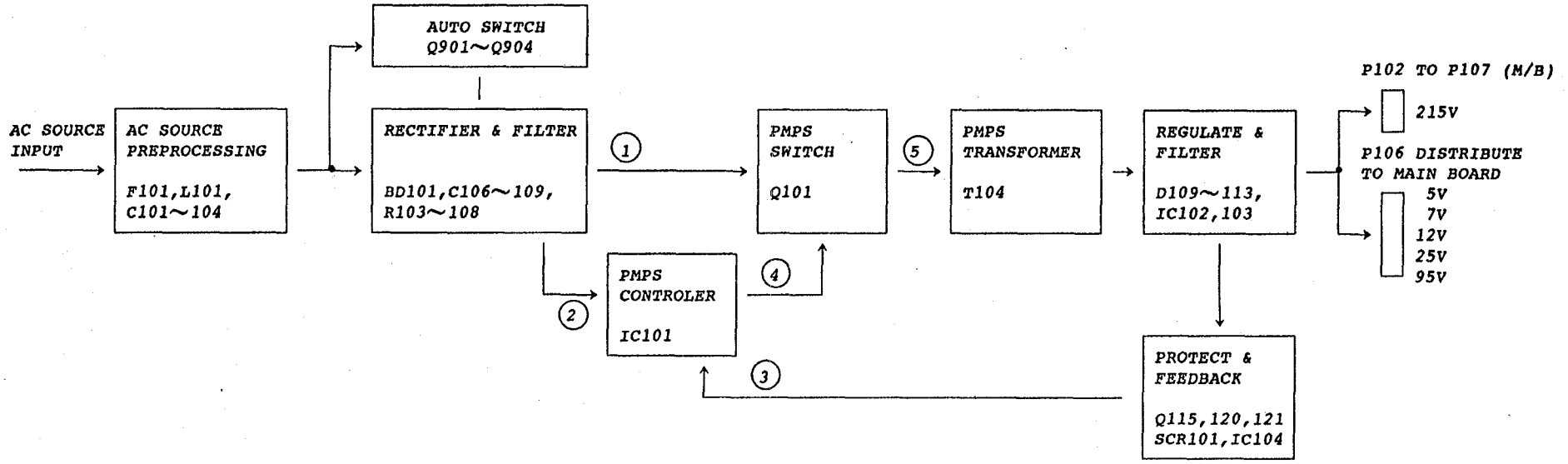
3. SYSTEM FUNCTION BLOCK DIAGRAM



4. BOARDs' FUNCTION BLOCK DIAGRAM

4.1 POWER BOARD

4.1.1 SUB-FUNCTION BLOCK



LOCATION OF WAVEFORM OR VOLTAGE:

① THE POSITIVE PIN OF BD101
② IC101 PIN 2
③ IC101 PIN 8
④ IC101 PIN 5
⑤ Q101 DRAIN

4.1.2 VOLTAGE OF PARTS

POWER BOARD:

The voltage of location.

TABLE 1

LOCATION	①	②	③	④	⑤
VOLTAGE	277VDC	1.2VDC	0.4VDC	3.6VDC	277VDC

NOTE: THE TABLE 1 & 2 WERE TESTED WITH COMMAND POINT " ▽ " (MINUS PIN OF C107).

The following voltage record was measured with cross-hatch pattern.

POWER BOARD:

Transister

TABLE 2

TR	Q101		
PIN / MODE	G	D	S
VGA-350	3.3	277.0	0.0
VGA-400	3.3	277.0	0.0
VGA-480	3.3	277.0	0.0
SVGA Ⅰ	3.3	277.0	0.0
8514A	3.3	277.0	0.0
8514NI	3.3	277.0	0.0
VESA1024	3.3	277.0	0.0
SVGA Ⅱ	3.3	277.0	0.0
SVGA Ⅲ	3.3	277.0	0.0
VESA350	3.3	277.0	0.0
VESA400	3.3	277.0	0.0
VESA480	3.3	277.0	0.0
MAC Ⅱ	3.3	277.0	0.0
COLOR 64K	3.3	277.0	0.0

TABLE 3

TR	Q901		Q904
PIN / MODE	G	A	G
AC 110V	-9.1	-11.0	-0.7
AC 220V	-0.3	-1.6	0.0

NOTE: THE TABLE 1.3 WAS TESTED BY COMMAND POINT P105 5TH PIN.

The following voltage record was measured with cross-hatch pattern.

POWER BOARD:

Transister

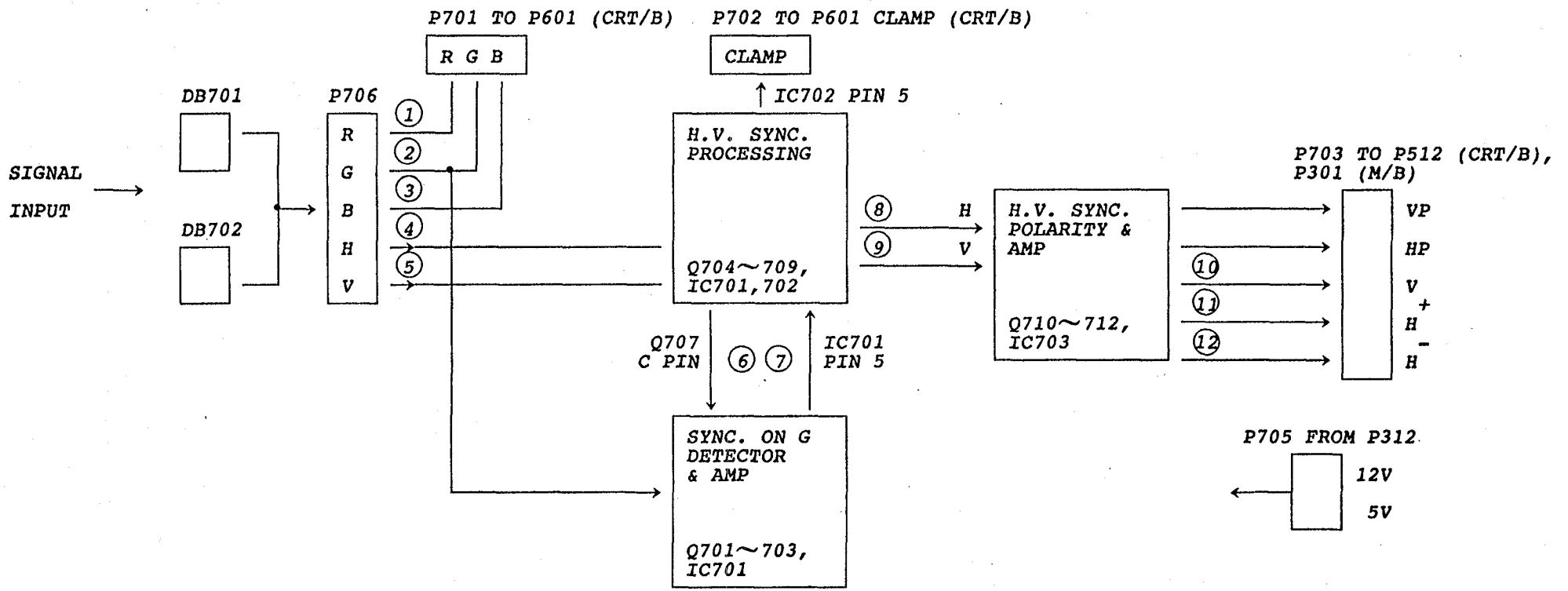
TABLE 4

TR	Q115			Q120			Q121		
PIN / MODE	R	A	K	R	A	K	B	C	E
VGA-350	2.4	0.0	9.9	2.3	0.0	11.6	11.6	0.0	12.0
VGA-400	2.4	0.0	9.9	2.3	0.0	11.6	11.6	0.0	12.0
VGA-480	2.4	0.0	9.9	2.3	0.0	11.6	11.6	0.0	12.0
SVGA I	2.4	0.0	9.9	2.3	0.0	11.6	11.6	0.0	12.0
8514A	2.4	0.0	9.9	2.3	0.0	11.6	11.6	0.0	12.0
8514NI	2.4	0.0	9.9	2.3	0.0	11.6	11.6	0.0	12.0
VESA1024	2.4	0.0	9.9	2.3	0.0	11.6	11.6	0.0	12.0
SVGA II	2.4	0.0	9.9	2.3	0.0	11.6	11.6	0.0	12.0
SVGA III	2.4	0.0	9.9	2.3	0.0	11.6	11.6	0.0	12.0
VESA350	2.4	0.0	9.9	2.3	0.0	11.6	11.6	0.0	12.0
VESA400	2.4	0.0	9.9	2.3	0.0	11.6	11.6	0.0	12.0
VESA480	2.4	0.0	9.9	2.3	0.0	11.6	11.6	0.0	12.0
MAC II	2.4	0.0	9.9	2.3	0.0	11.6	11.6	0.0	12.0
COLOR 64K	2.4	0.0	9.9	2.3	0.0	11.6	11.6	0.0	12.0

TR	SR101		
PIN / MODE	A	K	G
VGA-350	9.9	0.0	0.0
VGA-400	9.9	0.0	0.0
VGA-480	9.9	0.0	0.0
SVGA I	9.9	0.0	0.0
8514A	9.9	0.0	0.0
8514NI	9.9	0.0	0.0
VESA1024	9.9	0.0	0.0
SVGA II	9.9	0.0	0.0
SVGA III	9.9	0.0	0.0
VESA350	9.9	0.0	0.0
VESA400	9.9	0.0	0.0
VESA480	9.9	0.0	0.0
MAC II	9.9	0.0	0.0
COLOR 64K	9.9	0.0	0.0

4.2 INTERFACE BOARD

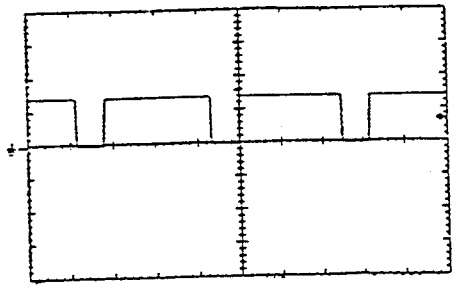
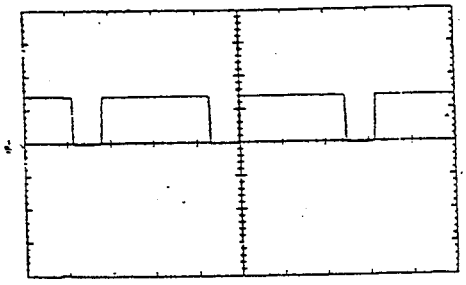
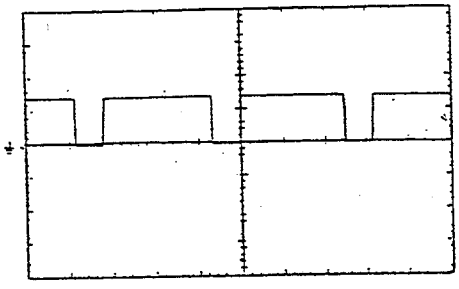
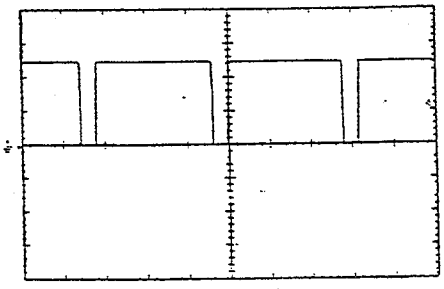
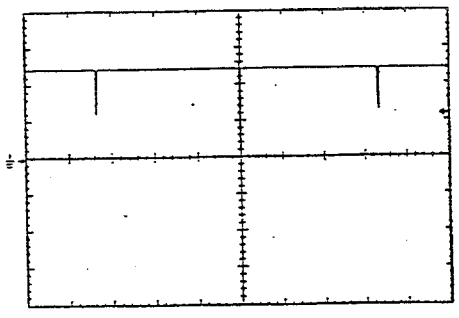
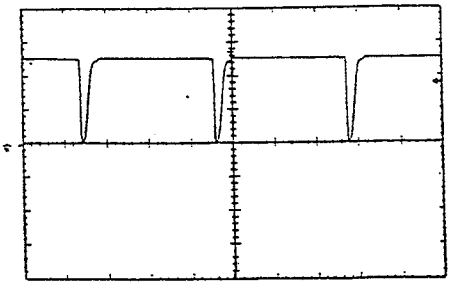
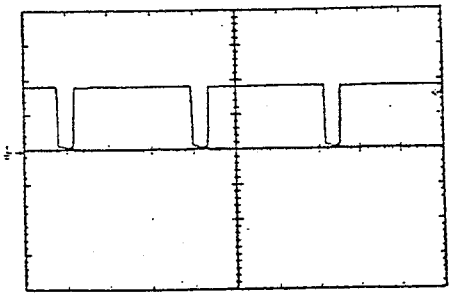
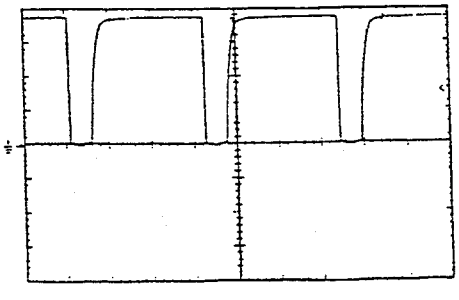
4.2.1 SUB-FUNCTION BLOCK (WITH WAVEFORM)

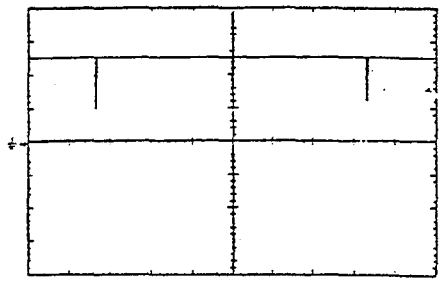
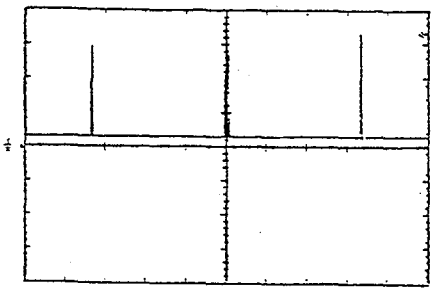
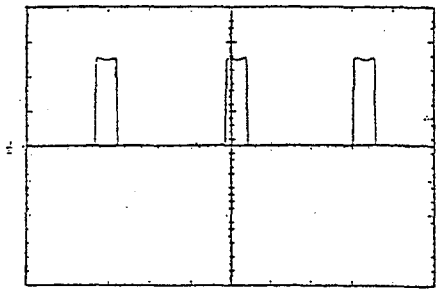
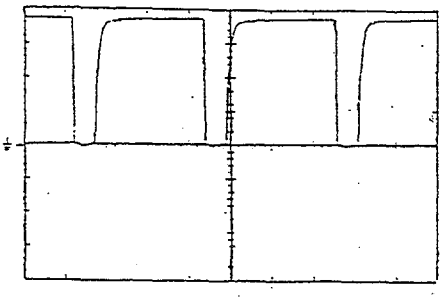


LOCATION OF WAVEFORM OR VOLTAGE:

① P701 PIN R	⑧ Q708 COLLECTOR
② P701 PIN G	⑨ IC701 PIN 8
③ P701 PIN B	⑩ P703 PIN V
④ IC701 PIN 1	⑪ P703 PIN H+
⑤ IC701 PIN 10	⑫ P703 PIN H-
⑥ Q707 COLLECTOR	
⑦ IC701 PIN 5	

NOTE: THE PIN'S SYMBOL OF P703 ACCORDING TO PCB.

① 0.7Vpp 31.5KHZ	② 0.7Vpp 31.5KHZ
	
③ 0.7Vpp 31.5KHZ	④ 5Vpp 31.5KHZ
	
⑤ 2.4Vpp 60HZ	⑥ 5Vpp 31.5KHZ
	
⑦ 3.6Vpp 31.5KHZ	⑧ 7.4Vpp 31.5KHZ
	

⑨ 2.8Vpp 60HZ	⑩ 1.7Vpp 60HZ
	
⑪ 5Vpp 31.5KHZ	⑫ 7.4Vpp 31.5KHZ
	

4.2.2 VOLTAGE OF PARTS

The following voltage record was measured with cross-hatch pattern.

INTERFACE BOARD:

Transister

TABLE 5

TR	Q701			Q702			Q703		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	1.0	10.7	0.4	10.7	12.0	10.0	0.6	0.5	0.0
VGA-400	1.0	10.7	0.4	10.7	12.0	10.0	0.6	0.5	0.0
VGA-480	1.0	10.7	0.4	10.7	12.0	10.0	0.6	0.5	0.0
SVGA I	1.0	10.7	0.4	10.7	12.0	10.0	0.6	0.5	0.0
8514A	1.0	10.7	0.4	10.7	12.0	10.0	0.6	0.5	0.0
8514NI	1.0	10.7	0.4	10.7	12.0	10.0	0.6	0.5	0.0
VESA1024	1.0	10.7	0.4	10.7	12.0	10.0	0.6	0.5	0.0
SVGA II	1.0	10.7	0.4	10.7	12.0	10.0	0.6	0.5	0.0
SVGA III	1.0	10.7	0.4	10.7	12.0	10.0	0.6	0.5	0.0
VESA350	1.0	10.7	0.4	10.7	12.0	10.0	0.6	0.5	0.0
VESA400	1.0	10.7	0.4	10.7	12.0	10.0	0.6	0.5	0.0
VESA480	1.0	10.7	0.4	10.7	12.0	10.0	0.6	0.5	0.0
MAC II	1.0	10.7	0.4	10.7	12.0	10.0	0.5	4.3	0.0
COLOR 64K	1.0	10.7	0.4	10.7	12.0	10.0	0.6	0.5	0.0

TR	Q704			Q705			Q706		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	0.3	8.4	0.0	0.7	0.0	0.0	0.7	0.0	0.0
VGA-400	0.7	0.2	0.0	0.7	0.0	0.0	0.0	3.2	0.0
VGA-480	0.7	0.2	0.0	0.7	0.0	0.0	0.0	3.2	0.0
SVGA I	0.7	0.0	0.0	0.7	0.0	0.0	0.0	3.2	0.0
8514A	0.3	81.0	0.0	0.7	0.0	0.0	0.7	0.0	0.0
8514NI	0.7	0.0	0.0	0.7	0.0	0.0	0.0	3.2	0.0
VESA1024	0.7	0.0	0.0	0.7	0.0	0.0	0.0	3.2	0.0
SVGA II	0.3	8.3	0.0	0.7	0.0	0.0	0.7	0.0	0.0
SVGA III	0.3	8.2	0.0	0.7	0.0	0.0	0.7	0.0	0.0
VESA350	0.3	9.4	0.0	0.7	0.0	0.0	0.7	0.0	0.0
VESA400	0.7	0.0	0.0	0.7	0.0	0.0	0.0	3.2	0.0
VESA480	0.7	0.0	0.0	0.7	0.0	0.0	0.0	3.2	0.0
MAC II	0.0	10.6	0.0	0.0	0.5	0.0	0.7	0.0	0.0
COLOR 64K	0.3	8.9	0.0	0.7	0.0	0.0	0.7	0.0	0.0

The following voltage record was measured with cross-hatch pattern.

INTERFACE BOARD:

Transister

TABLE 6

TR	Q707			Q708			Q709		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	0.3	4.4	0.0	0.2	5.8	0.0	0.7	0.0	0.0
VGA-400	0.3	4.4	0.0	0.2	5.8	0.0	0.7	0.0	0.0
VGA-480	0.3	4.4	0.0	0.2	5.9	0.0	0.7	0.0	0.0
SVGA I	0.3	4.3	0.0	0.2	6.3	0.0	0.7	0.0	0.0
8514A	0.3	4.3	0.0	0.2	5.7	0.0	0.7	0.0	0.0
8514NI	0.3	4.1	0.0	0.2	5.8	0.0	0.7	0.0	0.0
VESA1024	0.3	4.0	0.0	0.2	5.7	0.0	0.7	0.0	0.0
SVGA II	0.3	4.3	0.0	0.2	5.8	0.0	0.7	0.0	0.0
SVGA III	0.3	4.1	0.0	0.2	5.7	0.0	0.7	0.0	0.0
VESA350	0.3	4.3	0.0	0.2	6.5	0.0	0.7	0.0	0.0
VESA400	0.3	4.3	0.0	0.2	6.5	0.0	0.7	0.0	0.0
VESA480	0.3	4.3	0.0	0.2	6.5	0.0	0.7	0.0	0.0
MAC II	0.3	5.0	0.0	0.3	6.1	0.0	0.7	0.0	0.0
COLOR 64K	0.3	4.0	0.0	0.2	6.1	0.0	0.7	0.0	0.0

TR	Q710			Q711			Q712		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	0.0	11.3	0.0	0.7	0.0	0.0	0.2	0.8	0.0
VGA-400	0.7	0.0	0.0	0.2	11.3	0.0	0.2	0.8	0.0
VGA-480	0.7	0.0	0.0	0.7	0.0	0.0	0.2	0.8	0.0
SVGA I	0.7	0.0	0.0	0.7	0.0	0.0	0.3	0.6	0.0
8514A	0.0	11.4	0.0	0.2	11.4	0.0	0.1	1.0	0.0
8514NI	0.7	0.0	0.0	0.7	0.0	0.0	0.1	0.8	0.0
VESA1024	0.7	0.0	0.0	0.7	0.0	0.0	0.1	0.9	0.0
SVGA II	0.0	11.4	0.0	0.2	11.4	0.0	0.2	0.9	0.0
SVGA III	0.0	11.4	0.0	0.2	11.4	0.0	0.1	0.9	0.0
VESA350	0.0	11.3	0.0	0.7	0.0	0.0	0.4	0.5	0.0
VESA400	0.7	0.0	0.0	0.2	11.4	0.0	0.4	0.5	0.0
VESA480	0.7	0.0	0.0	0.7	0.0	0.0	0.4	0.5	0.0
MAC II	0.0	11.3	0.0	0.7	0.0	0.0	0.3	0.7	0.0
COLOR 64K	0.0	11.4	0.0	0.2	11.4	0.0	0.2	0.6	0.0

The following voltage record was measured with cross-hatch pattern.

INTERFACE BOARD:

Integration Circuit

TABLE 7

IC	IC701 (74LS136)							
PIN / MODE	1	2	3	4	5	6	7	8
VGA-350	0.5	0.0	0.5	0.0	0.5	0.6	0.0	5.0
VGA-400	3.1	0.0	3.1	3.2	3.1	0.6	0.0	0.2
VGA-480	3.1	0.0	3.1	3.2	3.1	0.6	0.0	5.0
SVGA I	3.4	0.0	3.4	3.2	3.4	0.4	0.0	5.0
8514A	0.5	0.0	0.5	0.0	0.5	0.7	0.0	0.2
8514NI	3.2	0.0	3.2	3.2	3.2	0.5	0.0	5.0
VESA1024	3.2	0.0	3.2	3.2	3.2	0.5	0.0	5.0
SVGA II	0.5	0.0	0.5	0.0	0.5	0.6	0.0	0.2
SVGA III	0.4	0.0	0.4	0.0	0.4	0.6	0.0	0.2
VESA350	0.3	0.0	0.3	0.0	0.3	0.3	0.0	5.0
VESA400	3.6	0.0	3.6	3.2	3.6	0.3	0.0	0.2
VESA480	3.6	0.0	3.6	3.2	3.6	0.3	0.0	5.0
MAC II	0.0	0.0	0.0	0.0	0.0	0.1	0.0	5.0
COLOR 64K	0.3	0.0	0.3	0.0	0.3	0.4	0.0	0.2

IC	IC701 (74LS136)					
PIN / MODE	9	10	11	12	13	14
VGA-350	0.0	5.0	0.0	5.0	0.5	5.0
VGA-400	0.0	0.0	0.0	5.0	0.5	5.0
VGA-480	0.0	5.0	0.0	5.0	0.5	5.0
SVGA I	0.0	5.0	0.0	5.0	0.5	5.0
8514A	0.0	0.0	0.0	5.0	0.5	5.0
8514NI	0.0	5.0	0.0	5.0	0.5	5.0
VESA1024	0.0	5.0	0.0	5.0	0.5	5.0
SVGA II	0.0	0.2	0.0	5.0	0.5	5.0
SVGA III	0.0	0.2	0.0	5.0	0.5	5.0
VESA350	0.0	5.0	0.0	5.0	0.5	5.0
VESA400	0.0	0.2	0.0	5.0	0.5	5.0
VESA480	0.0	5.0	0.0	5.0	0.5	5.0
MAC II	0.0	5.0	0.5	5.0	4.3	5.0
COLOR 64K	0.0	0.2	0.0	5.0	0.5	5.0

The following voltage record was measured with cross-hatch pattern.

INTERFACE BOARD:

Integration Circuit

TABLE 8

IC	IC702 (74LS123)						
PIN / MODE	2	3	5	8	9	10	11
VGA-350	5.0	5.0	0.3	0.0	0.0	4.4	5.0
VGA-400	5.0	5.0	0.3	0.0	0.0	4.4	5.0
VGA-480	5.0	5.0	0.3	0.0	0.0	4.4	5.0
SVGA I	5.0	5.0	0.3	0.0	0.0	4.3	5.0
8514A	5.0	5.0	0.3	0.0	0.0	4.3	5.0
8514NI	5.0	5.0	0.4	0.0	0.0	4.1	5.0
VESA1024	5.0	5.0	0.4	0.0	0.0	4.0	5.0
SVGA II	5.0	5.0	0.3	0.0	0.0	4.3	5.0
SVGA III	5.0	5.0	0.4	0.0	0.0	4.1	5.0
VESA350	5.0	5.0	0.3	0.0	0.0	4.3	5.0
VESA400	5.0	5.0	0.3	0.0	0.0	4.3	5.0
VESA480	5.0	5.0	0.3	0.0	0.0	4.3	5.0
MAC II	5.0	5.0	0.3	0.0	0.0	5.0	5.0
COLOR 64K	5.0	5.0	0.5	0.0	0.0	4.0	5.0

TABLE 9

IC	IC703 (74LS86)							
PIN / MODE	1	2	3	4	5	6	7～13	14
VGA-350	0.0	5.0	3.5	3.5	5.0	0.2	0.0	12.0
VGA-400	0.0	0.2	0.1	0.1	0.2	0.1	0.0	12.0
VGA-480	0.0	5.0	3.5	3.5	5.0	0.2	0.0	12.0
SVGA I	0.0	5.0	3.5	3.5	5.0	0.2	0.0	12.0
8514A	0.0	0.2	0.1	0.1	0.2	0.1	0.0	12.0
8514NI	0.0	5.0	3.5	3.5	5.0	0.2	0.0	12.0
VESA1024	0.0	5.0	3.5	3.5	5.0	0.2	0.0	12.0
SVGA II	0.0	0.2	0.1	0.1	0.2	0.1	0.0	12.0
SVGA III	0.0	0.2	0.1	0.1	0.2	0.1	0.0	12.0
VESA350	0.0	5.0	3.5	3.5	5.0	0.2	0.0	12.0
VESA400	0.0	0.2	0.1	0.1	0.2	0.1	0.0	12.0
VESA480	0.0	5.0	3.5	3.5	5.0	0.2	0.0	12.0
MAC II	0.0	5.0	3.5	3.5	5.0	0.2	0.0	12.0
COLOR 64K	0.0	0.2	0.1	0.1	0.2	0.1	0.0	12.0

The following voltage record was measured with cross-hatch pattern.

INTERFACE BOARD:

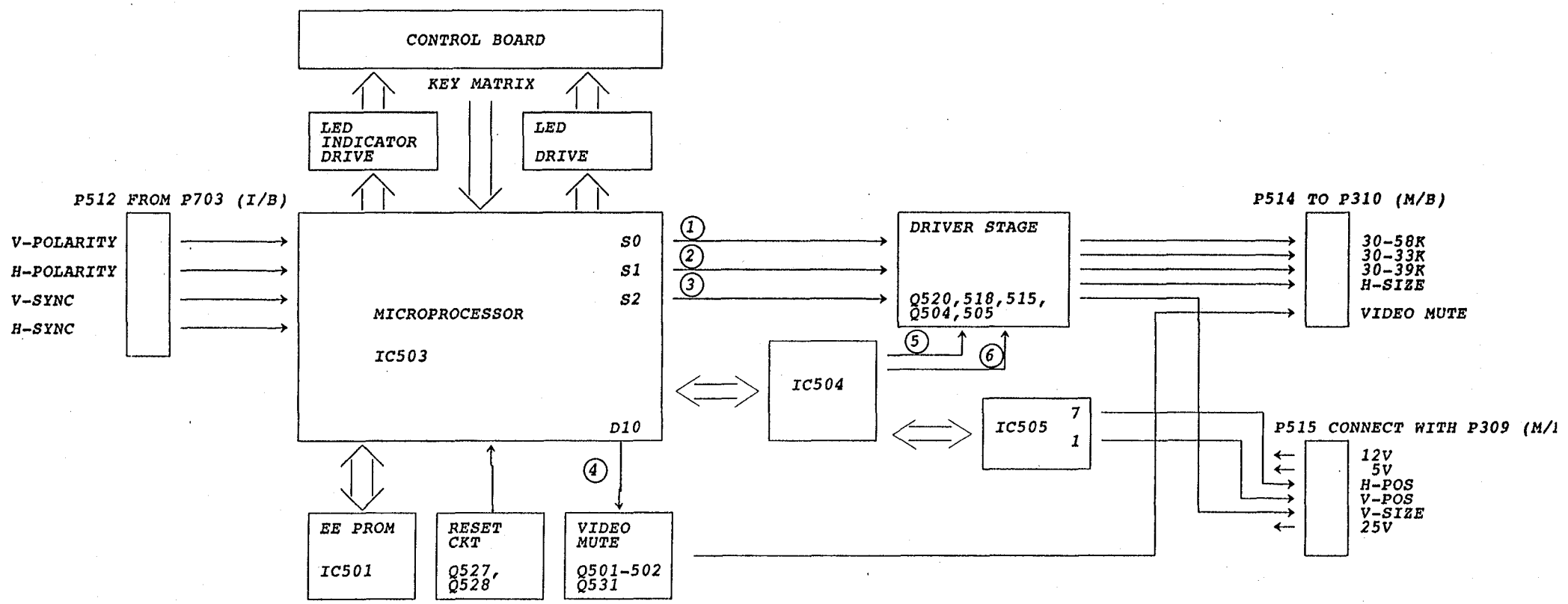
Plug

TABLE 10

PLUG	P703				
PIN / MODE	VP	HP	V	H^+	H
VGA-350	0.0	11.4	0.2	0.9	6.0
VGA-400	11.3	0.0	0.1	0.9	5.9
VGA-480	0.0	0.0	0.2	0.9	5.9
SVGA I	0.0	0.0	0.2	1.0	6.3
8514A	11.4	11.4	0.1	0.9	5.7
8514NI	0.0	0.0	0.2	0.9	5.8
VESA1024	0.0	0.0	0.2	0.9	5.7
SVGA II	11.4	11.4	0.1	0.9	5.8
SVGA III	11.4	11.4	0.1	0.9	5.7
VESA350	0.0	11.4	0.2	0.5	6.5
VESA400	11.4	0.0	0.1	0.5	6.5
VESA480	0.0	0.0	0.2	0.5	6.5
MAC II	0.0	11.4	0.2	0.6	6.3
COLOR 64K	11.4	11.4	0.1	0.6	6.1

4.3 MICRO BOARD

4.3.1 SUB-FUNCTION BLOCK (WITH WAVEFORM)



LOCATION OF WAVEFORM OR VOLTAGE:

① IC503 PIN 10 S0
② IC503 PIN 11 S1
③ IC503 PIN 12 S2
④ IC503 PIN 30 D10
⑤ IC504 PIN 13 A2
⑥ IC504 PIN 15 A4

4.3.2 VOLTAGE OF BLOCK'S PARTS

The following voltage record was measured with cross-hatch pattern.

MICRO BOARD:

Transister

TABLE 11

TR	Q501			Q502			Q504		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	0.8	12.0	0.0	0.1	0.8	0.0	7.0	7.1	6.4
VGA-400	0.8	12.0	0.0	0.1	0.8	0.0	5.2	8.5	4.6
VGA-480	0.8	12.0	0.0	0.1	0.8	0.0	4.8	8.8	4.2
SVGA I	0.8	12.0	0.0	0.1	0.8	0.0	4.3	9.2	3.7
8514A	0.8	12.0	0.0	0.1	0.8	0.0	5.3	8.5	4.7
8514NI	0.8	12.0	0.0	0.1	0.8	0.0	4.4	9.1	3.8
VESA1024	0.8	12.0	0.0	0.1	0.8	0.0	4.7	8.9	4.1
SVGA II	0.8	12.0	0.0	0.1	0.8	0.0	4.4	9.1	3.8
SVGA III	0.8	12.0	0.0	0.1	0.8	0.0	5.3	8.4	4.7
VESA350	0.8	12.0	0.0	0.1	0.8	0.0	7.9	7.2	7.2
VESA400	0.8	12.0	0.0	0.1	0.8	0.0	5.8	8.1	5.1
VESA480	0.8	12.0	0.0	0.1	0.8	0.0	5.0	8.7	4.4
MAC II	0.8	12.0	0.0	0.1	0.8	0.0	5.0	8.7	4.4
COLOR 64K	0.8	12.0	0.0	0.1	0.8	0.0	4.2	9.3	3.6

TR	Q505			Q507			Q508		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	6.2	5.5	5.4	4.9	4.9	4.3	0.0	4.3	0.0
VGA-400	6.5	5.8	5.8	0.0	4.3	0.0	4.9	4.3	4.3
VGA-480	6.6	5.8	5.9	0.0	4.0	0.0	0.0	4.0	0.0
SVGA I	6.9	6.2	6.2	0.0	4.0	0.00	0.0	4.0	0.0
8514A	6.2	5.5	5.5	5.2	4.6	4.6	5.2	4.6	4.6
8514NI	7.3	6.5	6.5	0.0	4.0	0.0	0.0	4.0	0.0
VESA1024	7.2	6.5	6.5	0.0	4.0	0.0	0.0	4.0	0.0
SVGA II	7.3	6.5	6.5	5.2	4.6	4.6	5.2	4.6	4.6
SVGA III	7.1	6.4	6.4	5.2	4.6	4.6	5.2	4.6	4.6
VESA350	6.6	5.9	5.9	4.9	4.3	4.3	0.0	4.3	0.0
VESA400	7.1	6.4	6.4	0.0	4.3	0.0	4.9	4.3	4.3
VESA480	6.9	6.2	6.2	0.0	4.0	0.0	0.0	4.0	0.0
MAC II	7.2	6.5	6.5	4.9	4.3	4.3	0.0	4.3	0.0
COLOR 64K	7.2	6.5	6.5	5.2	4.6	4.6	5.2	4.6	4.6

The following voltage record was measured with cross-hatch pattern.

MICRO BOARD:

Transister

TABLE 12

TR	Q515			Q517			Q518		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	0.0	10.2	0.0	0.0	0.7	0.0	0.0	10.8	0.0
VGA-400	0.0	10.2	0.0	0.0	0.7	0.0	0.0	10.8	0.0
VGA-480	0.0	10.3	0.0	0.0	0.7	0.0	0.0	10.8	0.0
SVGA I	0.0	9.9	0.0	0.0	0.7	0.0	0.0	10.4	0.0
8514A	0.0	9.8	0.0	0.0	0.7	0.0	0.0	10.3	0.0
8514NI	0.0	9.1	0.0	0.0	0.7	0.0	0.7	0.1	0.0
VESA1024	0.7	0.5	0.0	0.0	0.7	0.0	0.0	1.2	0.0
SVGA II	0.0	9.9	0.0	0.0	0.7	0.0	0.0	10.4	0.0
SVGA III	0.0	8.3	0.0	0.0	0.7	0.0	0.7	0.1	0.0
VESA350	0.0	9.8	0.0	0.0	0.7	0.0	0.0	10.3	0.0
VESA400	0.0	9.8	0.0	0.0	0.7	0.0	0.0	10.3	0.0
VESA480	0.0	9.8	0.0	0.0	0.7	0.0	0.0	10.4	0.0
MAC II	0.0	9.8	0.0	0.0	0.7	0.0	0.0	10.4	0.0
COLOR 64K	0.7	0.2	0.0	0.0	0.7	0.0	0.0	0.9	0.0

TR	Q520			Q522			Q523		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	0.0	10.8	0.0	0.6	0.0	0.0	0.0	4.8	0.0
VGA-400	0.0	10.8	0.0	0.6	0.0	0.0	0.0	4.8	0.0
VGA-480	0.0	10.8	0.0	0.6	0.0	0.0	0.0	4.8	0.0
SVGA I	0.7	0.1	0.0	0.6	0.0	0.0	0.0	4.8	0.0
8514A	0.7	0.1	0.0	0.6	0.0	0.0	0.0	4.8	0.0
8514NI	0.7	0.1	0.0	0.6	0.0	0.0	0.0	4.8	0.0
VESA1024	0.0	0.2	0.0	0.6	0.0	0.0	0.0	4.8	0.0
SVGA II	0.7	0.1	0.0	0.6	0.0	0.0	0.0	4.8	0.0
SVGA III	0.7	0.1	0.0	0.6	0.0	0.0	0.0	4.8	0.0
VESA350	0.7	0.1	0.0	0.6	0.0	0.0	0.0	4.8	0.0
VESA400	0.7	0.1	0.0	0.6	0.0	0.0	0.0	4.8	0.0
VESA480	0.7	0.1	0.0	0.6	0.0	0.0	0.0	4.8	0.0
MAC II	0.7	0.1	0.0	0.6	0.0	0.0	0.0	4.8	0.0
COLOR 64K	0.7	0.1	0.0	0.6	0.0	0.0	0.0	4.8	0.0

The following voltage record was measured with cross-hatch pattern.

MICRO BOARD:

Transister

TABLE 13

TR	Q524			Q525			Q526		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	0.7	0.0	0.0	0.7	0.0	0.0	0.0	4.9	0.0
VGA-400	0.7	0.0	0.0	0.7	0.0	0.0	0.0	4.9	0.0
VGA-480	0.7	0.0	0.0	0.7	0.0	0.0	0.0	4.9	0.0
SVGA I	0.7	0.0	0.0	0.7	0.0	0.0	0.0	4.9	0.0
8514A	0.7	0.0	0.0	0.7	0.0	0.0	0.0	4.9	0.0
8514NI	0.7	0.0	0.0	0.7	0.0	0.0	0.0	4.9	0.0
VESA1024	0.7	0.0	0.0	0.7	0.0	0.0	0.0	4.9	0.0
SVGA II	0.7	0.0	0.0	0.7	0.0	0.0	0.0	4.9	0.0
SVGA III	0.7	0.0	0.0	0.7	0.0	0.0	0.0	4.9	0.0
VESA350	0.7	0.0	0.0	0.7	0.0	0.0	0.0	4.9	0.0
VESA400	0.7	0.0	0.0	0.7	0.0	0.0	0.0	4.9	0.0
VESA480	0.7	0.0	0.0	0.7	0.0	0.0	0.0	4.9	0.0
MAC II	0.7	0.0	0.0	0.7	0.0	0.0	0.0	4.9	0.0
COLOR 64K	0.7	0.0	0.0	0.7	0.0	0.0	0.0	4.9	0.0

TR	Q527			Q528			Q531		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	0.0	5.0	0.0	0.7	0.0	0.0	12.0	12.0	0.1
VGA-400	0.0	5.0	0.0	0.7	0.0	0.0	12.0	12.0	0.1
VGA-480	0.0	5.0	0.0	0.7	0.0	0.0	12.0	12.0	0.1
SVGA I	0.0	5.0	0.0	0.7	0.0	0.0	12.0	12.0	0.1
8514A	0.0	5.0	0.0	0.7	0.0	0.0	12.0	12.0	0.1
8514NI	0.0	5.0	0.0	0.7	0.0	0.0	12.0	12.0	0.1
VESA1024	0.0	5.0	0.0	0.7	0.0	0.0	12.0	12.0	0.1
SVGA II	0.0	5.0	0.0	0.7	0.0	0.0	12.0	12.0	0.1
SVGA III	0.0	5.0	0.0	0.7	0.0	0.0	12.0	12.0	0.1
VESA350	0.0	5.0	0.0	0.7	0.0	0.0	12.0	12.0	0.1
VESA400	0.0	5.0	0.0	0.7	0.0	0.0	12.0	12.0	0.1
VESA480	0.0	5.0	0.0	0.7	0.0	0.0	12.0	12.0	0.1
MAC II	0.0	5.0	0.0	0.7	0.0	0.0	12.0	12.0	0.1
COLOR 64K	0.0	5.0	0.0	0.7	0.0	0.0	12.0	12.0	0.1

The following voltage record was measured with cross-hatch pattern.

MICRO BOARD:

Integration Circuit

TABLE 14

IC	IC501(80011)	
PIN / MODE	1	2
VGA-350	4.9	4.8
VGA-400	4.9	4.8
VGA-480	4.9	4.8
SVGA I	4.9	4.8
8514A	4.9	4.8
8514NI	4.9	4.7
VESA1024	4.9	4.7
SVGA II	4.9	4.7
SVGA III	4.9	4.7
VESA350	4.9	4.8
VESA400	4.9	4.8
VESA480	4.9	4.7
MAC II	4.9	4.8
COLOR 64K	4.8	4.7

TABLE 15

IC	IC502						
PIN / MODE	3	4	5	6	7	8	16
VGA-350	5.0	0.2	0.2	0.2	5.0	0.0	5.0
VGA-400	5.0	5.0	0.2	5.0	5.0	0.0	5.0
VGA-480	0.2	5.0	0.2	0.2	5.0	0.0	5.0
SVGA I	0.2	5.0	0.2	0.2	5.0	0.0	5.0
8514A	0.2	0.2	0.2	5.0	5.0	0.0	5.0
8514NI	0.2	0.2	5.0	0.2	5.0	0.0	5.0
VESA1024	0.2	0.2	5.0	0.2	5.0	0.0	5.0
SVGA II	5.0	5.0	0.2	0.2	5.0	0.0	5.0
SVGA III	0.2	0.2	0.2	0.2	5.0	0.0	5.0
VESA350	0.2	0.2	0.2	0.2	5.0	0.0	5.0
VESA400	5.0	5.0	0.2	5.0	0.4	0.0	5.0
VESA480	0.2	5.0	0.2	0.2	0.4	0.0	5.0
MAC II	0.2	5.0	0.2	0.2	0.4	0.0	5.0
COLOR 64K	0.2	0.2	0.2	5.0	0.4	0.0	5.0

The following voltage record was measured with cross-hatch pattern.

MICRO BOARD:

Integration Circuit

TABLE 16

IC	IC503 (M50727-034)			
PIN / MODE	10	11	12	30
VGA-350	0.0	0.0	0.0	0.0
VGA-400	0.0	0.0	0.0	0.0
VGA-480	0.0	0.0	0.0	0.0
SVGA I	3.3	0.0	0.0	0.0
8514A	3.3	0.0	0.0	0.0
8514NI	3.3	3.3	0.0	0.0
VESA1024	3.3	0.0	3.3	0.0
SVGA II	0.0	0.0	0.0	0.0
SVGA III	3.3	3.3	0.0	0.0
VESA350	3.3	0.0	0.0	0.0
VESA400	3.3	0.0	0.0	0.0
VESA480	3.3	0.0	0.0	0.0
MAC II	3.3	0.0	0.0	0.0
COLOR 64K	3.3	0.0	3.3	0.0

TABLE 17

IC	IC504 (M62359P)	
PIN / MODE	13	15
VGA-350	9.1	9.3
VGA-400	6.6	10.1
VGA-480	5.2	10.2
SVGA I	5.0	9.7
8514A	6.1	8.8
8514NI	5.3	10.8
VESA1024	5.5	11.4
SVGA II	5.1	11.3
SVGA III	6.6	11.2
VESA350	11.4	10.3
VESA400	7.4	11.4
VESA480	6.4	10.9
MAC II	6.0	11.3
COLOR 64K	5.2	11.7

TABLE 18

IC	IC505	
PIN / MODE	1	7
VGA-350	4.6	2.2
VGA-400	7.2	2.2
VGA-480	7.1	2.2
SVGA I	9.6	2.5
8514A	7.7	2.6
8514NI	8.3	3.0
VESA1024	8.6	1.4
SVGA II	6.7	2.9
SVGA III	13.3	3.6
VESA350	4.4	2.9
VESA400	5.1	2.7
VESA480	7.9	2.9
MAC II	3.3	3.0
COLOR 64K	7.6	4.0

The following voltage record was measured with cross-hatch pattern.
MICRO BOARD:
Plug

TABEL 19

PLUG	P 5 1 4				
PIN / MODE	30-52K	30-33K	30-39K	H-SIZE	VEDIO MUTE *
VGA-350	10.2	10.8	10.8	5.4	0.0
VGA-400	10.2	10.8	10.8	5.8	0.0
VGA-480	10.3	10.8	10.8	5.9	0.0
SVGA I	9.9	0.1	10.4	6.2	0.0
8514A	9.8	0.1	10.3	5.5	0.0
8514NI	9.1	0.1	0.1	6.5	0.0
VESA1024	0.5	0.2	1.2	6.5	0.0
SVGA II	9.9	0.1	10.4	6.5	0.0
SVGA III	8.3	0.1	0.1	6.4	0.0
VESA350	9.8	0.1	10.3	5.9	0.0
VESA400	9.8	0.1	10.3	6.4	0.0
VESA480	9.8	0.1	10.4	6.2	0.0
MAC II	9.8	0.1	10.4	6.5	0.0
COLOR 64K	0.2	0.1	0.9	6.5	0.0

* MUTE SIGNAL KEEPS ZERO LEVEL BUT JUMPS TO 12VDC WHEN CHANGING MODE.

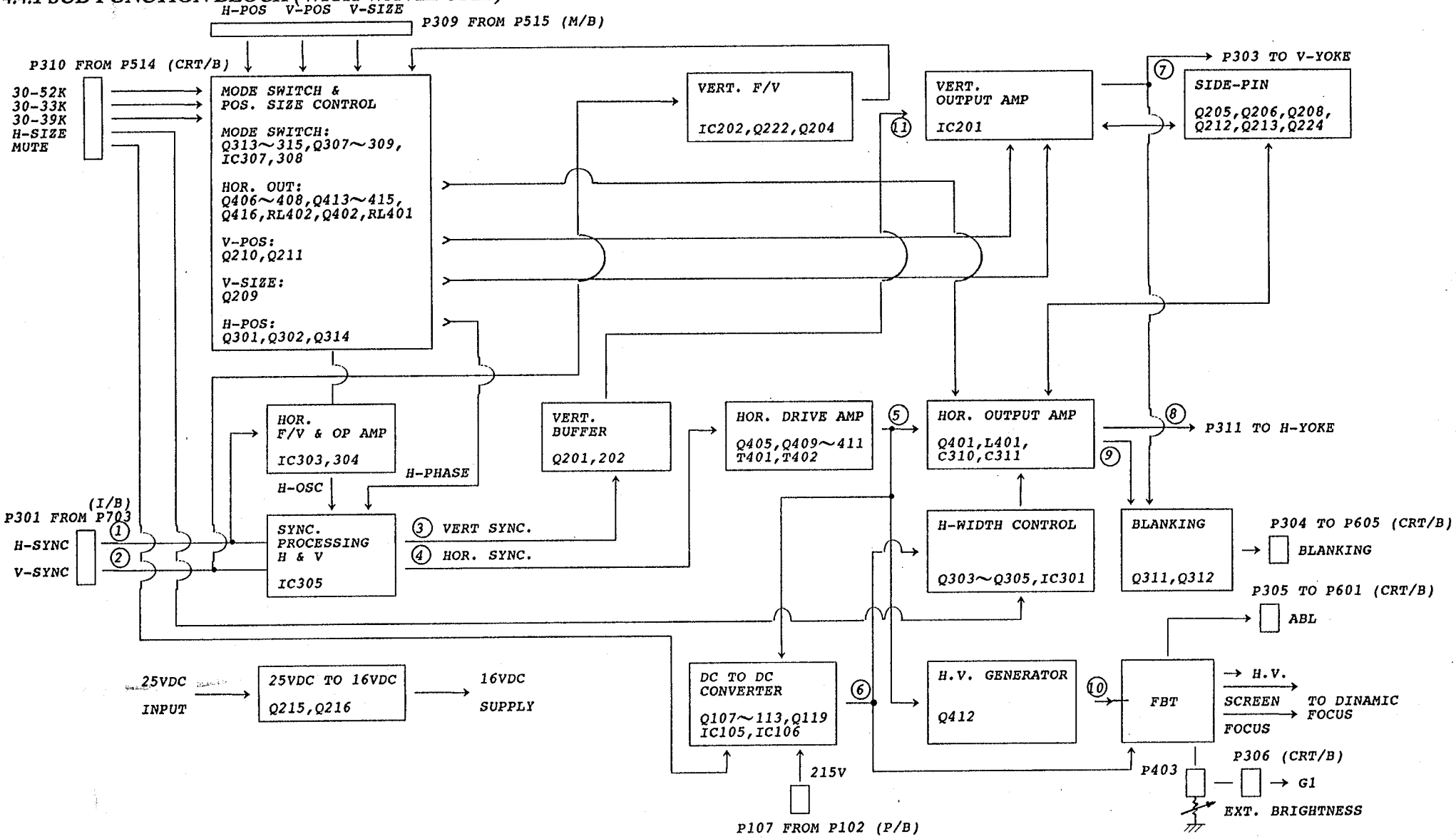
TABLE 20

PLUG	P 5 1 5		
PIN / MODE	H-POS	V-POS	V-SIZE
VGA-350	2.2	4.6	6.4
VGA-400	2.2	7.2	4.6
VGA-480	2.2	7.1	4.2
SVGA I	2.5	9.6	3.7
8514A	2.6	7.7	4.7
8514NI	3.0	8.3	3.8
VESA1024	1.4	8.6	4.1
SVGA II	2.9	6.7	3.8
SVGA III	3.6	13.3	4.7
VESA350	2.9	4.4	7.2
VESA400	2.7	5.1	5.1
VESA480	2.9	7.9	4.4
MAC II	3.0	3.3	4.4
COLOR 64K	4.0	7.6	3.6

NOTE:THE MEASUREMENT OF VOLTAGE ABOVE AMOUNT IS SET ACCORDING TO SPEC.
SIZE AND POSITION, AND THEIR VARIATION AS FOLLOWING:
H-SIZE: 2.0~6.5V
V-SIZE: 0.2~7.3V
H-POS: 0.6~5.9V
V-POS: 2.5~22.1V

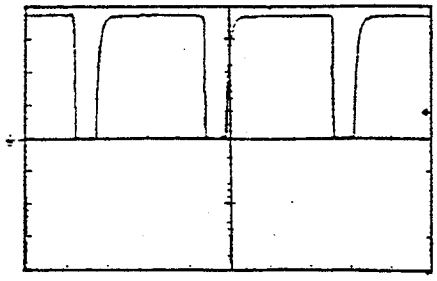
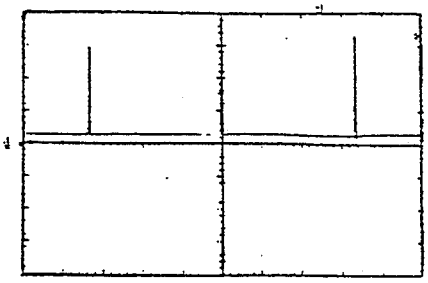
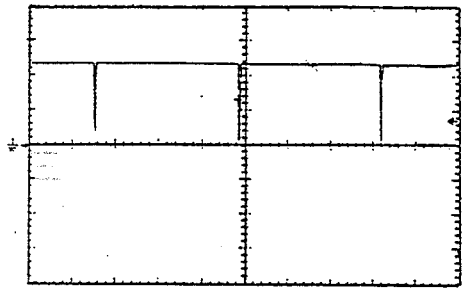
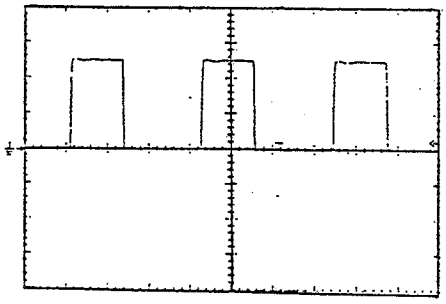
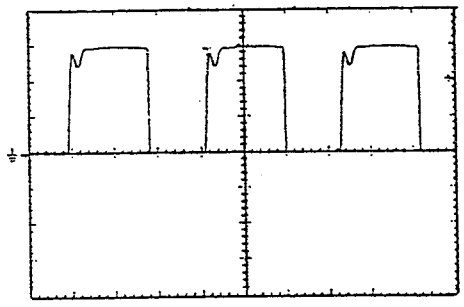
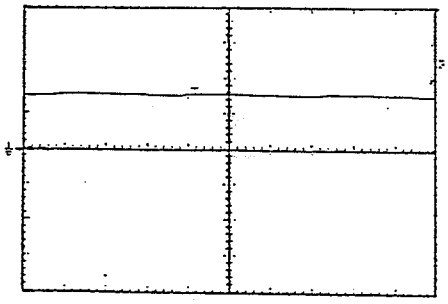
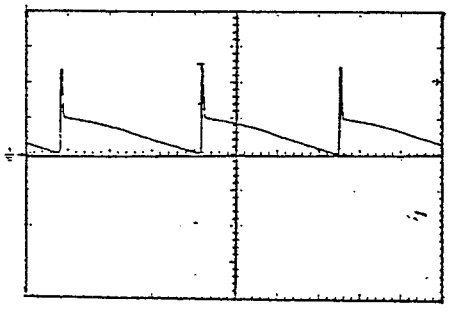
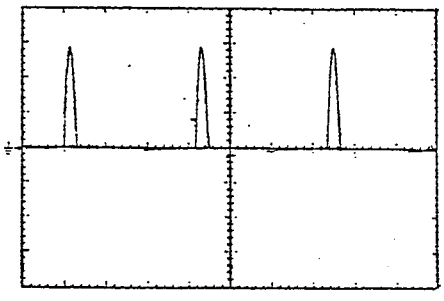
4.4 MAIN BOARD

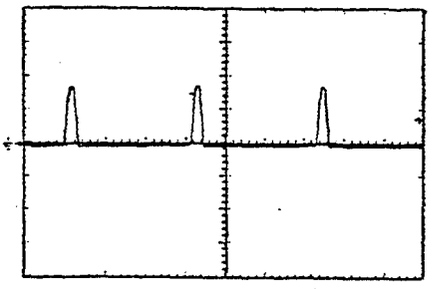
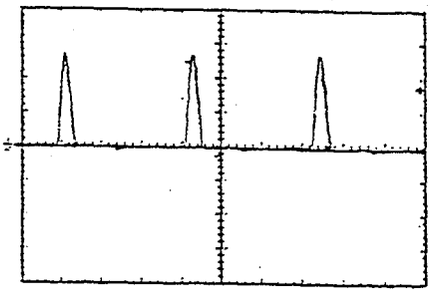
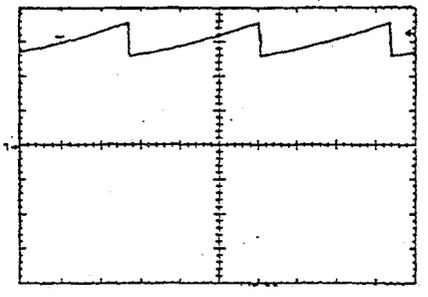
4.4.1 SUB-FUNCTION BLOCK (WITH WAVEFORM)



LOCATION OF WAVEFORM OR VOLTAGE:

① P301 PIN H-SYNC
② P301 PIN V-SYNC
③ IC305 PIN 16
④ IC305 PIN 12
⑤ Q405,Q411 DRAIN
⑥ L104 THE TERMINAL CONNECT TO C135, SAME AS Q305 COLLECTOR
⑦ IC201 PIN 12
⑧ Q401 COLLECTOR
⑨ NODE BETWEEN R356 AND C334
⑩ Q412 COLLECTOR
⑪ IC201 PIN 6

① 7.5Vpp 31.5KHz	② 3.3Vpp 60Hz
	
③ 4.6Vpp 60Hz	④ 12.5Vpp 31.5KHz
	
⑤ 147Vpp 31.5KHz	⑥ 76V
	
⑦ 47Vpp 60Hz	⑧ 1.1KVpp 31.5KHz
	

⑨ 94Vpp 31.5KHz	⑩ 880Vpp 31.5KHz
	
⑪ 1.9Vpp 60Hz	
	

4.4.2 VOLTAGE OF BLOCK'S PART

The following voltage record was measured with cross-hatch pattern.

MAIN BOARD:

Transister

TABLE 21

TR	Q107			Q108			Q109		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	0.0	5.1	0.0	0.4	8.8	0.0	8.8	25.0	9.2
VGA-400	0.0	5.1	0.0	0.4	8.8	0.0	8.8	25.0	9.3
VGA-480	0.0	5.1	0.0	0.4	8.8	0.0	8.8	25.0	9.3
SVGA I	0.0	5.1	0.0	0.4	9.7	0.0	9.7	25.0	10.1
8514A	0.0	5.1	0.0	0.4	9.8	0.0	9.8	25.0	10.2
8514NI	0.0	5.1	0.0	0.4	12.9	0.0	12.9	25.0	13.3
VESA1024	0.0	5.1	0.0	0.4	15.2	0.0	15.2	25.0	15.4
SVGA II	0.0	5.1	0.0	0.4	10.5	0.0	10.5	25.0	10.9
SVGA III	0.0	5.1	0.0	0.4	12.8	0.0	12.8	25.0	13.2
VESA350	0.0	5.1	0.0	0.4	10.5	0.0	10.5	25.0	10.9
VESA400	0.0	5.1	0.0	0.4	10.5	0.0	10.5	25.0	10.9
VESA480	0.0	5.1	0.0	0.4	10.5	0.0	10.5	25.0	10.9
MAC II	0.0	5.1	0.0	0.4	9.6	0.0	9.6	25.0	10.0
COLOR 64K	0.0	5.1	0.0	0.4	17.7	0.0	17.7	25.0	17.9

TR	Q110			Q111			Q112		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	8.8	0.0	9.2	74.6	71.5	76.4	218.0	0.0	218.2
VGA-400	8.8	0.0	9.3	76.4	71.6	76.4	218.1	0.0	218.2
VGA-480	8.8	0.0	9.3	76.4	71.6	76.4	218.1	0.0	218.2
SVGA I	9.7	0.0	10.1	83.9	78.6	83.9	217.9	0.0	218.0
8514A	9.8	0.0	10.2	84.8	79.5	84.8	218.0	0.0	218.0
8514NI	12.9	0.0	13.3	113.0	106.0	113.0	217.1	0.0	217.2
VESA1024	15.2	0.0	15.4	131.8	123.5	131.8	216.7	0.0	216.8
SVGA II	10.5	0.0	10.9	91.5	85.7	91.5	217.7	0.0	217.8
SVGA III	12.8	0.0	13.2	112.3	105.2	112.3	217.0	0.0	217.2
VESA350	10.5	0.0	10.9	91.5	85.6	91.5	217.5	0.0	217.6
VESA400	10.5	0.0	10.9	91.4	85.5	91.4	217.5	0.0	217.6
VESA480	10.5	0.0	10.9	91.5	85.6	91.5	217.6	0.0	217.7
MAC II	9.6	0.0	10.0	83.6	78.1	83.6	217.7	0.0	217.8
COLOR 64K	17.7	0.0	17.9	153.8	144.1	153.8	216.5	0.0	216.5

The following voltage record was measured with cross-hatch pattern.

MAIN BOARD:

Transister

TABLE 22

TR	Q113			Q119		
PIN / MODE	G	S	D	B	C	E
VGA-350	76.4	71.5	217.5	11.0	1.7	11.5
VGA-400	76.4	71.6	217.6	11.0	1.7	11.5
VGA-480	76.4	71.6	217.6	11.0	1.7	11.5
SVGA I	83.9	78.6	217.1	10.9	1.7	11.5
8514A	84.8	79.5	216.8	10.9	1.7	11.5
8514NI	113.0	106.0	215.2	10.8	1.6	11.5
VESA1024	131.8	123.5	216.0	10.8	1.6	11.5
SVGA II	91.5	85.7	216.5	10.9	1.7	11.5
SVGA III	112.3	105.2	215.1	10.8	1.6	11.5
VESA350	91.5	85.6	216.2	10.9	1.7	11.5
VESA400	91.4	85.5	216.3	10.9	1.7	11.5
VESA480	91.5	85.6	216.3	10.9	1.7	11.5
MAC II	83.6	78.1	216.8	10.9	1.7	11.5
COLOR 64K	153.8	144.1	215.1	10.9	1.5	11.5

TR	Q201			Q202			Q202		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	0.7	0.1	0.0	0.1	3.4	0.0	0.1	3.4	0.0
VGA-400	0.7	0.1	0.0	0.1	3.3	0.0	0.1	3.3	0.0
VGA-480	0.7	0.1	0.0	0.1	3.2	0.0	0.1	3.2	0.0
SVGA I	0.7	0.1	0.0	0.1	3.2	0.0	0.1	3.2	0.0
8514A	0.7	0.1	0.0	0.1	3.2	0.0	0.1	3.2	0.0
8514NI	0.7	0.1	0.0	0.1	3.2	0.0	0.1	3.2	0.0
VESA1024	0.7	0.1	0.0	0.1	3.2	0.0	0.1	3.2	0.0
SVGA II	0.7	0.1	0.0	0.1	3.2	0.0	0.1	3.2	0.0
SVGA III	0.7	0.1	0.0	0.1	3.3	0.0	0.1	3.3	0.0
VESA350	0.7	0.1	0.0	0.1	3.4	0.0	0.1	3.4	0.0
VESA400	0.7	0.1	0.0	0.1	3.3	0.0	0.1	3.3	0.0
VESA480	0.7	0.1	0.0	0.1	3.3	0.0	0.1	3.3	0.0
MAC II	0.7	0.1	0.0	0.1	3.2	0.0	0.1	3.2	0.0
COLOR 64K	0.7	0.1	0.0	0.1	3.2	0.0	0.1	3.2	0.0

The following voltage record was measured with cross-hatch pattern.

MAIN BOARD:

Transister

TABLE 23

TR	Q205			Q206			Q206		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	3.7	12.0	3.1	3.1	0.0	3.7	3.1	0.0	3.7
VGA-400	3.3	12.0	2.7	2.7	0.0	3.3	2.7	0.0	3.3
VGA-480	2.8	12.0	2.2	2.2	0.0	2.8	2.2	0.0	2.8
SVGA I	2.6	12.0	3.1	3.1	0.0	2.6	3.1	0.0	2.6
8514A	3.8	12.0	2.1	2.1	0.0	3.7	2.1	0.0	3.7
8514NI	2.7	12.0	2.2	2.2	0.0	2.8	2.2	0.0	2.8
VESA1024	3.1	12.0	2.7	2.7	0.0	3.1	2.7	0.0	3.1
SVGA II	2.8	12.0	3.6	3.6	0.0	2.8	3.6	0.0	2.8
SVGA III	3.3	12.0	2.8	2.8	0.0	3.3	2.8	0.0	3.3
VESA350	4.2	12.0	3.6	3.6	0.0	4.2	3.6	0.0	4.2
VESA400	3.8	12.0	3.3	3.3	0.0	3.8	3.3	0.0	3.8
VESA480	3.3	12.0	2.7	2.7	0.0	3.3	2.7	0.0	3.3
MAC II	3.1	12.0	2.5	2.5	0.0	3.1	2.5	0.0	3.1
COLOR 64K	2.7	12.0	2.2	2.2	0.0	2.8	2.2	0.0	2.8

TR	Q209			Q210			Q210		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	3.7	5.8	3.2	6.8	25.0	6.3	6.8	25.0	6.3
VGA-400	3.3	5.8	2.8	9.0	25.0	8.5	9.0	25.0	8.5
VGA-480	2.8	5.8	3.3	9.6	25.0	9.2	9.6	25.0	9.2
SVGA I	2.6	5.8	2.1	11.2	25.0	10.7	11.2	25.0	10.7
8514A	3.8	5.8	3.2	9.4	25.0	8.9	9.4	25.0	8.9
8514NI	2.8	5.8	2.2	10.0	25.0	9.5	10.0	25.0	9.5
VESA1024	3.1	5.8	2.6	10.3	25.0	9.8	10.3	25.0	9.8
SVGA II	2.8	5.8	2.3	10.4	25.0	9.9	10.4	25.0	9.9
SVGA III	3.4	5.8	2.8	15.6	25.0	14.9	15.6	25.0	14.9
VESA350	4.3	5.8	3.7	6.9	25.0	6.5	6.9	25.0	6.5
VESA400	3.9	5.8	3.3	7.2	25.0	6.7	7.2	25.0	6.7
VESA480	3.4	5.8	2.8	9.8	25.0	9.3	9.8	25.0	9.3
MAC II	3.1	5.8	2.6	7.1	25.0	6.6	7.1	25.0	6.6
COLOR 64K	2.8	5.8	2.2	9.9	25.0	9.5	9.9	25.0	9.5

The following voltage record was measured with cross-hatch pattern.

MAIN BOARD:

Transister

TABLE 24

TR	Q212			Q213			Q213		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	5.2	9.4	4.6	1.7	4.6	1.0	1.7	4.6	1.0
VGA-400	5.2	9.8	4.6	1.7	4.6	1.0	1.7	4.6	1.0
VGA-480	5.2	10.2	4.6	1.7	4.6	1.0	1.7	4.6	1.0
SVGA I	5.2	10.5	4.6	1.7	4.6	1.0	1.7	4.6	1.0
8514A	5.2	9.4	4.6	1.7	4.6	1.1	1.7	4.6	1.1
8514NI	5.2	10.3	4.6	1.7	4.6	1.0	1.7	4.6	1.0
VESA1024	5.2	10.0	4.6	1.7	4.6	1.0	1.7	4.6	1.0
SVGA II	5.2	10.3	4.6	1.7	4.6	1.0	1.7	4.6	1.0
SVGA III	5.2	9.5	4.6	1.7	4.6	1.0	1.7	4.6	1.0
VESA350	5.2	9.0	4.6	1.7	4.6	1.0	1.7	4.6	1.0
VESA400	5.2	9.3	4.6	1.7	4.6	1.0	1.7	4.6	1.0
VESA480	5.2	9.7	4.6	1.7	4.6	1.0	1.7	4.6	1.0
MAC II	5.2	10.0	4.6	1.7	4.6	1.0	1.7	4.6	1.0
COLOR 64K	5.2	10.3	4.6	1.7	4.6	1.0	1.7	4.6	1.0

TR	Q216			Q222			Q224		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	16.1	25.0	16.0	0.2	11.0	0.0	5.2	12.0	4.6
VGA-400	16.0	25.0	16.0	0.1	10.9	0.0	5.2	12.0	4.6
VGA-480	16.0	25.0	16.0	0.2	11.0	0.0	5.2	12.0	4.6
SVGA I	16.0	25.0	16.0	0.2	11.1	0.0	5.2	12.0	4.6
8514A	16.0	25.0	16.0	0.1	10.9	0.0	5.2	12.0	4.6
8514NI	15.9	25.0	16.0	0.2	10.9	0.0	5.2	12.0	4.6
VESA1024	16.0	25.0	16.0	0.2	10.9	0.0	5.2	12.0	4.6
SVGA II	16.0	25.0	16.0	0.1	10.9	0.0	5.2	12.0	4.6
SVGA III	16.0	25.0	16.0	0.1	10.9	0.0	5.2	12.0	4.6
VESA350	16.0	25.0	16.0	0.2	10.9	0.0	5.2	12.0	4.6
VESA400	16.0	25.0	16.0	0.1	10.9	0.0	5.2	12.0	4.6
VESA480	16.0	25.0	16.0	0.2	10.9	0.0	5.2	12.0	4.6
MAC II	16.0	25.0	16.0	0.2	10.9	0.0	5.2	12.0	4.6
COLOR 64K	16.0	25.0	16.0	0.1	10.9	0.0	5.2	12.0	4.6

The following voltage record was measured with cross-hatch pattern.

MAIN BOARD:

Transister

TABLE 25

TR	Q301			Q302			Q303		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	1.6	7.6	0.9	0.7	0.0	0.0	10.2	62.1	9.6
VGA-400	1.6	7.5	1.0	0.7	0.0	0.0	10.2	62.1	9.6
VGA-480	1.6	7.5	0.9	0.7	0.0	0.0	10.2	61.0	9.6
SVGA I	1.7	7.4	1.1	0.7	0.0	0.0	10.2	69.3	9.6
8514A	1.7	7.3	1.1	0.7	0.0	0.0	10.2	69.8	9.6
8514NI	2.0	6.9	1.3	0.7	0.0	0.0	10.2	98.8	9.6
VESA1024	1.3	8.1	0.6	0.7	2.5	0.0	10.2	112.4	9.6
SVGA II	1.9	7.1	1.3	0.7	0.0	0.0	10.2	78.1	9.6
SVGA III	2.2	6.6	1.6	0.7	0.0	0.0	10.2	95.6	9.6
VESA350	1.9	7.0	1.3	0.7	0.0	0.0	10.2	75.4	9.6
VESA400	1.8	7.2	1.2	0.7	0.0	0.0	10.2	77.7	9.6
VESA480	1.9	7.1	1.3	0.7	0.0	0.0	10.2	77.0	9.6
MAC II	1.9	7.1	1.3	0.7	0.0	0.0	10.2	71.0	9.6
COLOR 64K	2.5	6.3	1.8	0.7	1.4	0.0	10.2	130.1	9.6

TR	Q304			Q305			Q306		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	62.1	70.8	61.5	61.5	70.8	61.0	5.8	5.3	7.4
VGA-400	62.1	70.8	61.5	61.5	70.8	61.0	5.8	5.3	7.4
VGA-480	61.0	70.8	70.4	60.4	70.8	59.9	5.8	5.3	7.4
SVGA I	69.3	77.8	68.7	68.9	77.8	68.2	6.1	5.7	7.0
8514A	69.8	78.7	69.2	69.2	78.7	68.7	5.6	5.2	7.5
8514NI	98.0	105.3	97.4	97.4	105.3	96.8	5.7	5.3	7.2
VESA1024	112.4	123.1	111.7	111.7	123.1	111.2	5.6	5.3	7.3
SVGA II	78.1	84.9	77.4	77.4	84.9	76.9	5.7	5.3	7.4
SVGA III	95.6	104.6	95.0	95.0	104.6	94.5	5.6	5.2	7.3
VESA350	75.4	85.0	74.8	74.8	85.0	74.3	6.3	5.8	6.8
VESA400	77.7	84.9	77.0	77.0	84.9	76.5	6.3	5.8	6.8
VESA480	77.0	85.0	76.4	76.4	85.0	75.9	6.3	5.8	6.8
MAC II	71.0	77.5	70.4	70.4	77.5	69.8	6.0	5.5	7.1
COLOR 64K	130.1	128.9	129.5	129.5	128.9	128.9	6.0	5.6	6.8

The following voltage record was measured with cross-hatch pattern.

MAIN BOARD:

Transister

TABLE 26

TR	Q307			Q308			Q309		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	10.3	16.0	9.9	10.6	0.1	9.9	0.7	0.1	0.0
VGA-400	10.3	16.0	9.9	10.6	0.1	9.9	0.7	0.1	0.0
VGA-480	10.5	16.0	11.8	11.2	11.8	11.8	0.3	11.8	0.0
SVGA I	10.1	16.0	11.7	11.1	11.7	11.7	0.2	11.7	0.0
8514A	9.9	16.0	9.5	10.2	0.0	9.5	0.8	0.0	0.0
8514NI	9.1	16.0	9.9	9.2	9.9	9.9	0.3	9.9	0.0
VESA1024	0.7	16.0	0.6	1.1	0.1	0.6	0.7	0.1	0.0
SVGA II	10.1	16.0	11.7	11.1	11.7	11.7	0.3	11.7	0.0
SVGA III	2.0	16.0	1.3	0.6	0.1	1.3	0.7	0.1	0.0
VESA350	9.9	16.0	9.5	10.2	0.0	9.5	0.8	0.0	0.0
VESA400	9.9	16.0	9.5	10.2	0.0	9.5	0.8	0.0	0.0
VESA480	9.9	16.0	9.5	10.2	0.1	9.5	0.7	0.1	0.0
MAC II	10.0	16.0	11.1	10.4	10.1	11.1	0.6	10.1	0.0
COLOR 64K	2.3	16.0	9.7	9.0	9.7	9.7	0.3	9.7	0.0

TR	Q311			Q312			Q313		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	-0.4	3.2	0.0	10.1	2.9	8.4	0.7	0.1	0.0
VGA-400	-0.3	3.2	0.0	10.1	2.9	8.4	0.7	0.1	0.0
VGA-480	-0.4	3.2	0.0	10.2	2.9	8.4	0.7	0.1	0.0
SVGA I	-0.3	3.2	0.0	10.1	2.9	8.3	0.7	0.1	0.0
8514A	-0.4	3.2	0.0	9.9	2.9	8.1	0.7	0.1	0.0
8514NI	-0.3	3.2	0.0	9.6	3.1	7.7	0.0	14.5	0.0
VESA1024	-0.3	3.1	0.0	9.2	3.1	7.3	0.1	14.5	0.0
SVGA II	-0.3	3.2	0.0	9.9	2.9	8.1	0.7	0.1	0.0
SVGA III	-0.3	3.2	0.0	9.5	3.1	7.6	0.0	14.5	0.0
VESA350	-0.3	3.2	0.0	9.8	3.0	8.0	0.7	0.1	0.0
VESA400	-0.3	3.2	0.0	9.8	3.0	8.0	0.7	0.1	0.0
VESA480	-0.3	3.2	0.0	9.9	3.0	8.1	0.7	0.1	0.0
MAC II	-0.4	3.2	0.0	10.0	2.9	8.2	0.7	0.1	0.0
COLOR 64K	-0.3	3.1	0.0	9.0	3.2	7.1	0.1	14.5	0.0

The following voltage record was measured with cross-hatch pattern.

MAIN BOARD:

Transister

TABLE 27

TR	Q314			Q315		
PIN / MODE	B	C	E	B	C	E
VGA-350	11.8	1.6	12.0	0.1	16.0	0.0
VGA-400	11.8	1.5	12.0	0.1	16.0	0.0
VGA-480	11.8	1.5	12.0	0.1	16.0	0.0
SVGA I	11.8	1.7	12.0	0.1	16.0	0.0
8514A	11.7	1.7	12.0	0.1	16.0	0.0
8514NI	11.7	1.9	12.0	0.7	0.1	0.0
VESA1024	11.3	11.9	12.0	0.7	0.1	0.0
SVGA II	11.8	1.9	12.0	0.1	16.0	0.0
SVGA III	11.6	2.2	12.0	0.7	0.1	0.0
VESA350	11.7	1.9	12.0	0.1	16.0	0.0
VESA400	11.7	1.8	12.0	0.1	16.0	0.0
VESA480	11.8	1.9	12.0	0.1	16.0	0.0
MAC II	11.7	1.9	12.0	0.1	16.0	0.0
COLOR 64K	11.3	11.9	12.0	0.7	0.1	0.0

TR	Q401			Q402			Q405		
PIN / MODE	B	C	E	B	C	E	G	D	S
VGA-350	-0.5	61.3	0.0	0.7	2.8	0.0	4.7	84.6	0.0
VGA-400	-0.5	62.1	0.0	0.7	2.8	0.0	4.7	84.4	0.0
VGA-480	-0.5	62.4	0.0	0.7	2.8	0.0	4.7	84.4	0.0
SVGA I	-0.5	70.7	0.0	0.7	3.2	0.0	4.9	82.6	0.0
8514A	-0.5	69.4	0.0	0.7	3.2	0.0	4.9	82.5	0.0
8514NI	-0.4	97.1	0.0	0.1	11.9	0.0	4.6	82.9	0.0
VESA1024	-0.7	113.2	0.0	0.5	11.4	0.0	4.9	84.4	0.0
SVGA II	-0.5	77.8	0.0	0.7	3.3	0.0	5.0	81.3	0.0
SVGA III	-0.4	95.6	0.0	0.1	11.9	0.0	4.6	83.0	0.0
VESA350	-0.5	75.8	0.0	0.7	3.4	0.0	5.0	81.3	0.0
VESA400	-0.5	77.2	0.0	0.7	3.3	0.0	5.0	81.3	0.0
VESA480	-0.5	76.7	0.0	0.7	3.3	0.0	5.0	81.3	0.0
MAC II	-0.5	71.3	0.0	0.7	3.3	0.0	4.9	82.6	0.0
COLOR 64K	-0.7	130.9	0.0	0.4	11.6	0.0	5.0	81.8	0.0

The following voltage record was measured with cross-hatch pattern.

MAIN BOARD:

Transister

TABLE 28

TR	Q406			Q407			Q408		
PIN / MODE	G	D	S	G	D	S	G	D	S
VGA-350	10.6	0.0	0.0	10.6	0.0	0.0	10.0	0.0	0.0
VGA-400	10.6	0.0	0.0	10.6	0.0	0.0	10.0	0.0	0.0
VGA-480	10.6	0.0	0.0	10.6	0.0	0.0	10.0	0.0	0.0
SVGA I	0.1	26.2	0.0	10.2	0.0	0.0	9.7	0.0	0.0
8514A	0.1	25.4	0.0	10.2	0.0	0.0	9.6	0.0	0.0
8514NI	0.1	35.1	0.0	0.11	35.1	0.0	8.9	0.0	0.0
VESA1024	1.2	41.5	0.0	1.2	41.5	0.0	0.5	41.3	0.0
SVGA II	0.1	24.7	0.0	10.2	0.0	0.0	9.7	0.0	0.0
SVGA III	0.1	35.7	0.0	0.1	36.0	0.0	8.2	0.0	0.0
VESA350	0.1	25.1	0.0	10.2	0.0	0.0	9.6	0.0	0.0
VESA400	0.1	25.0	0.0	10.2	0.0	0.0	9.6	0.0	0.0
VESA480	0.1	24.6	0.0	10.2	0.0	0.0	9.6	0.0	0.0
MAC II	0.1	27.1	0.0	10.2	0.0	0.0	9.6	0.0	0.0
COLOR 64K	0.1	36.7	0.0	0.9	36.7	0.0	0.2	35.5	0.0

TR	Q409			Q410			Q411		
PIN / MODE	B	C	E	B	C	E	G	D	S
VGA-350	4.8	12.0	4.7	4.8	0.0	4.7	4.7	70.5	0.0
VGA-400	4.8	12.0	4.7	4.8	0.0	4.7	4.7	70.5	0.0
VGA-480	4.8	12.0	4.7	4.8	0.0	4.7	4.7	70.5	0.0
SVGA I	5.0	12.0	4.9	5.0	0.0	4.9	4.9	68.1	0.0
8514A	5.0	12.0	4.9	5.0	0.0	4.9	4.9	67.9	0.0
8514NI	4.6	12.0	4.6	4.6	0.0	4.6	4.6	68.3	0.0
VESA1024	4.9	12.0	4.9	4.9	0.0	4.9	4.9	70.2	0.0
SVGA II	5.1	12.0	5.0	5.1	0.0	5.0	5.0	66.4	0.0
SVGA III	4.6	12.0	4.6	4.6	0.0	4.6	4.6	68.3	0.0
VESA350	5.0	12.0	5.0	5.0	0.0	5.0	5.0	66.3	0.0
VESA400	5.1	12.0	5.0	5.1	0.0	5.0	5.0	66.4	0.0
VESA480	5.1	12.0	5.0	5.1	0.0	5.0	5.0	66.3	0.0
MAC II	4.9	12.0	4.9	4.9	0.0	4.9	4.9	68.1	0.0
COLOR 64K	4.9	12.0	5.0	4.9	0.0	5.0	5.0	68.3	0.0

The following voltage record was measured with cross-hatch pattern.

MAIN BOARD:

Transister

TABLE 29

TR	Q412			Q413			Q414		
PIN / MODE	B	C	E	G	D	S	G	D	S
VGA-350	1.6	70.8	0.0	10.6	0.1	0.0	10.5	0.0	0.0
VGA-400	1.6	70.8	0.0	10.6	0.1	0.0	10.5	0.0	0.0
VGA-480	1.6	70.8	0.0	10.6	0.1	0.0	10.5	0.0	0.0
SVGA I	1.6	77.8	0.0	0.1	7.5	0.0	10.2	0.0	0.0
8514A	1.6	78.7	0.0	0.1	7.5	0.0	10.1	0.0	0.0
8514NI	1.5	105.3	0.0	0.1	26.1	0.0	0.1	26.0	0.0
VESA1024	1.6	123.1	0.0	1.2	35.9	0.0	1.2	35.4	0.0
SVGA II	1.7	84.9	0.0	0.1	8.0	0.0	10.2	0.04	0.0
SVGA III	1.6	104.6	0.0	0.1	26.0	0.0	0.1	25.9	0.0
VESA350	1.5	85.0	0.0	0.1	8.0	0.0	10.1	0.0	0.0
VESA400	1.6	84.9	0.0	0.1	8.0	0.0	10.1	0.0	0.0
VESA480	1.6	85.0	0.0	0.1	8.0	0.0	10.1	0.0	0.0
MAC II	1.6	77.5	0.0	0.1	7.4	0.0	10.1	0.0	0.0
COLOR 64K	1.7	143.9	0.0	0.1	41.2	0.0	0.9	41.0	0.0

TR	Q415			Q416		
PIN / MODE	G	D	S	B	C	E
VGA-350	10.0	0.0	0.0	0.7	0.1	0.0
VGA-400	10.0	0.0	0.0	0.7	0.1	0.0
VGA-480	10.0	0.0	0.0	0.7	0.1	0.0
SVGA I	9.6	0.0	0.0	0.7	0.1	0.0
8514A	9.6	0.0	0.0	0.7	0.1	0.0
8514NI	8.9	0.0	0.0	0.7	0.1	0.0
VESA1024	0.5	31.9	0.0	0.4	11.9	0.0
SVGA II	9.7	0.0	0.0	0.7	0.1	0.0
SVGA III	8.2	0.0	0.0	0.7	0.1	0.0
VESA350	9.6	0.0	0.0	0.7	0.1	0.0
VESA400	9.6	0.0	0.0	0.7	0.1	0.0
VESA480	9.6	0.0	0.0	0.7	0.1	0.0
MAC II	9.6	0.0	0.0	0.7	0.1	0.0
COLOR 64K	0.2	37.3	0.0	0.2	11.9	0.0

The following voltage record was measured with cross-hatch pattern.

MAIN BOARD:

Integration Circuit

TABLE 30

IC	IC105 (74LS123)							
PIN / MODE	1	2	3	4	8	14	15	16
VGA-350	0.0	1.9	5.1	2.6	0.0	0.0	1.7	5.0
VGA-400	0.0	1.9	5.1	2.6	0.0	0.0	1.7	5.0
VGA-480	0.0	1.9	5.1	2.6	0.0	0.0	1.7	5.0
SVGA I	0.0	1.9	5.1	2.5	0.0	0.0	1.7	5.0
8514A	0.0	2.0	5.1	2.5	0.0	0.0	1.7	5.0
8514NI	0.0	1.8	5.1	2.0	0.0	0.0	1.7	5.0
VESA1024	0.0	2.0	5.1	1.6	0.0	0.0	1.6	5.0
SVGA II	0.0	2.0	5.1	2.4	0.0	0.0	1.7	5.0
SVGA III	0.0	1.8	5.1	2.0	0.0	0.0	1.7	5.0
VESA350	0.0	2.0	5.1	2.4	0.0	0.0	1.7	5.0
VESA400	0.0	2.0	5.1	2.4	0.0	0.0	1.7	5.0
VESA480	0.0	2.0	5.1	2.4	0.0	0.0	1.7	5.0
MAC II	0.0	1.9	5.1	2.5	0.0	0.0	1.7	5.0
COLOR 64K	0.0	2.0	5.1	1.2	0.0	0.0	1.5	5.0

TABLE 31

IC	IC106 (UPD4557)							
PIN / MODE	1	2	3	4	5	6	7	8
VGA-350	4.7	4.7	4.7	0	5.1	5.2	10.0	12.0
VGA-400	4.7	4.7	4.7	0	5.1	5.2	10.0	12.0
VGA-480	4.7	4.7	4.7	0	5.1	5.2	10.0	12.0
SVGA I	4.8	4.8	4.7	0	5.1	5.2	10.0	12.0
8514A	4.8	4.8	4.7	0	5.1	5.2	10.0	12.0
8514NI	4.8	4.8	4.8	0	5.1	5.2	9.7	12.0
VESA1024	4.8	4.8	4.8	0	5.1	5.2	9.9	12.0
SVGA II	4.8	4.8	4.7	0	5.1	5.2	9.7	12.0
SVGA III	4.8	4.8	4.8	0	5.1	5.2	9.9	12.0
VESA350	4.8	4.8	4.7	0	5.1	5.2	9.9	12.0
VESA400	4.8	4.8	4.7	0	5.1	5.2	9.9	12.0
VESA480	4.8	4.8	4.7	0	5.1	5.2	9.9	12.0
MAC II	4.8	4.8	4.7	0	5.1	5.1	9.9	12.0
COLOR 64K	4.7	4.7	4.8	0	5.1	5.2	9.9	12.0

The following voltage record was measured with cross-hatch pattern.

MAIN BOARD:

Integration Circuit

TABLE 32

IC	IC201 (LM7838)							
PIN / MODE	1	2	3	4	5	6	7	8
VGA-350	11.3	2.7	6.0	5.8	0.0	6.0	5.0	25.2
VGA-400	11.3	2.7	6.0	5.8	0.0	6.0	5.1	25.2
VGA-480	11.3	2.7	6.0	5.8	0.0	6.0	5.2	25.2
SVGA I	11.3	2.7	6.0	5.8	0.0	6.0	5.3	25.2
8514A	11.3	2.7	6.0	5.8	0.0	6.0	5.2	25.2
8514NI	11.3	2.8	6.1	5.8	0.0	5.8	5.2	25.2
VESA1024	11.3	2.7	6.1	5.8	0.0	5.8	5.2	25.2
SVGA II	11.3	2.8	6.0	5.8	0.0	5.8	5.3	25.2
SVGA III	11.3	2.8	6.1	5.8	0.0	5.9	5.2	25.2
VESA350	11.3	2.8	6.0	5.8	0.0	6.0	5.0	25.2
VESA400	11.3	2.8	6.0	5.8	0.0	5.9	5.1	25.2
VESA480	11.3	2.8	6.0	5.8	0.0	5.9	5.2	25.2
MAC II	11.3	2.8	6.0	5.8	0.0	5.9	5.2	25.2
COLOR 64K	11.3	2.8	6.2	5.8	0.0	5.8	5.3	25.2

IC	IC201 (LM7838)			
PIN / MODE	9	11	12	13
VGA-350	1.0	0.0	10.5	25.0
VGA-400	0.7	0.0	11.5	25.0
VGA-480	0.6	0.0	11.5	25.0
SVGA I	0.5	0.0	11.5	25.0
8514A	0.8	0.0	11.5	25.0
8514NI	0.6	0.0	11.7	25.0
VESA1024	0.7	0.0	11.5	25.0
SVGA II	0.6	0.0	11.6	25.0
SVGA III	0.7	0.0	11.0	25.0
VESA350	1.1	0.0	11.3	25.0
VESA400	0.9	0.0	11.6	25.0
VESA480	0.7	0.0	11.4	25.0
MAC II	1.1	0.0	11.8	25.0
COLOR 64K	0.6	0.0	11.7	25.0

The following voltage record was measured with cross-hatch pattern.

MAIN BOARD:

Integration Circuit

TABLE 33

IC	IC202 (HA17555))							
PIN / MODE	1	2	3	4	5	6	7	8
VGA-350	0.0	9.4	6.5	11.1	7.5	3.0	3.0	12.0
VGA-400	0.0	9.4	6.3	11.1	7.4	3.0	3.0	12.0
VGA-480	0.0	9.1	5.6	11.1	7.4	2.6	2.6	12.0
SVGA I	0.0	8.3	5.4	11.1	7.4	2.4	2.4	12.0
8514A	0.0	9.7	7.8	11.1	7.4	3.6	3.6	12.0
8514NI	0.0	9.7	5.6	11.1	7.4	2.7	2.7	12.0
VESA1024	0.0	9.7	6.4	11.1	7.4	3.0	3.0	12.0
SVGA II	0.0	9.6	5.6	11.1	7.4	2.6	2.6	12.0
SVGA III	0.0	9.7	6.6	11.1	7.4	3.1	3.1	12.0
VESA350	0.0	9.7	7.6	11.1	7.4	3.5	3.5	12.0
VESA400	0.0	9.7	7.6	11.1	7.4	3.5	3.5	12.0
VESA480	0.0	9.6	6.6	11.1	7.4	3.1	3.1	12.0
MAC II	0.0	9.6	6.2	11.1	7.4	2.9	2.9	12.0
COLOR 64K	0.0	9.5	5.6	11.1	7.4	2.6	2.6	12.0

TABLE 34

IC	IC301 (UPD4557)							
PIN / MODE	1	2	3	4	5	6	7	8
VGA-350	8.2	6.1	6.1	0.0	1.0	2.6	2.6	11.7
VGA-400	8.2	5.9	5.9	0.0	1.0	2.6	2.6	11.7
VGA-480	8.2	6.2	6.2	0.0	1.0	2.6	2.6	11.7
SVGA I	8.3	6.2	6.2	0.0	1.0	2.6	2.6	11.7
8514A	8.3	6.0	6.0	0.0	1.0	2.6	2.6	11.7
8514NI	8.5	6.0	6.0	0.0	1.0	2.6	2.6	11.7
VESA1024	8.8	5.8	5.8	0.0	1.0	2.6	2.6	11.7
SVGA II	8.3	6.3	6.3	0.0	1.0	2.6	2.6	11.7
SVGA III	8.6	5.9	5.9	0.0	1.0	2.6	2.6	11.7
VESA350	8.4	6.2	6.2	0.0	1.0	2.6	2.6	11.7
VESA400	8.4	6.3	6.3	0.0	1.0	2.6	2.6	11.7
VESA480	8.4	6.2	6.2	0.0	1.0	2.6	2.6	11.7
MAC II	8.3	6.3	6.3	0.0	1.0	2.6	2.6	11.7
COLOR 64K	8.9	5.8	5.8	0.0	1.0	2.7	2.7	11.7

The following voltage record was measured with cross-hatch pattern.

MAIN BOARD:

Integration Circuit

TABLE 35

IC	IC303 (UPC4557C)							
PIN / MODE	1	2	3	4	5	6	7	8
VGA-350	6.2	6.2	6.0	0.0	6.0	6.0	1.4	16.0
VGA-400	6.2	6.2	6.0	0.0	6.0	6.0	1.4	16.0
VGA-480	6.2	6.2	6.0	0.0	6.0	6.0	1.4	16.0
SVGA I	6.9	6.9	6.8	0.0	6.0	6.8	1.4	16.0
8514A	7.0	7.0	6.8	0.0	6.0	6.8	1.4	16.0
8514NI	9.5	9.5	9.3	0.0	6.0	9.3	1.4	16.0
VESA1024	11.0	11.0	10.8	0.0	6.0	10.8	1.4	16.0
SVGA II	7.4	7.4	7.3	0.0	6.0	7.3	1.4	16.0
SVGA III	9.4	9.4	9.2	0.0	6.0	9.2	1.4	16.0
VESA350	7.4	7.4	7.3	0.0	6.0	7.3	1.4	16.0
VESA400	7.4	7.4	7.3	0.0	6.0	7.3	1.4	16.0
VESA480	7.4	7.4	7.3	0.0	6.0	7.3	1.4	16.0
MAC II	6.8	6.8	6.7	0.0	6.0	6.7	1.4	16.0
COLOR 64K	12.4	12.4	12.2	0.0	6.0	12.2	1.4	16.0

TABLE 36

IC	IC304 (IR9331))							
PIN / MODE	1	2	3	4	5	6	7	8
VGA-350	6.0	1.9	0.0	0.0	5.4	25.0	23.3	25.3
VGA-400	6.0	1.9	0.0	0.0	5.4	25.0	23.3	25.3
VGA-480	6.0	1.9	0.0	0.0	5.4	25.0	23.3	25.3
SVGA I	6.8	1.9	0.0	0.0	6.0	25.0	23.3	25.3
8514A	6.8	1.9	0.0	0.0	6.1	25.0	23.3	25.3
8514NI	9.3	1.9	0.0	0.0	8.0	25.0	23.3	25.3
VESA1024	10.8	1.9	0.0	0.0	10.0	25.0	23.3	25.3
SVGA II	7.3	1.9	0.0	0.0	6.4	25.0	23.3	25.3
SVGA III	9.2	1.9	0.0	0.0	8.0	25.0	23.3	25.3
VESA350	7.3	1.9	0.0	0.0	6.4	25.0	23.3	25.3
VESA400	7.3	1.9	0.0	0.0	6.4	25.0	23.3	25.3
VESA480	7.3	1.9	0.0	0.0	6.4	25.0	23.3	25.3
MAC II	6.7	1.9	0.0	0.0	6.0	25.0	23.3	25.3
COLOR 64K	12.2	1.9	0.0	0.0	11.2	25.0	23.3	25.3

The following voltage record was measured with cross-hatch pattern.

MAIN BOARD:

Integration Circuit

TABLE 37

IC	IC305 (LA7856)							
PIN / MODE	1	2	3	4	5	6	7	8
VGA-350	4.6	7.6	7.6	-0.3	3.7	3.0	6.8	6.8
VGA-400	4.6	7.6	7.6	-0.3	3.7	3.0	6.8	6.8
VGA-480	4.6	7.6	7.6	-0.3	3.7	3.0	6.8	6.8
SVGA I	4.6	7.4	7.6	-0.3	3.7	3.0	7.3	6.8
8514A	4.6	7.3	7.6	-0.3	3.7	3.0	7.3	6.8
8514NI	4.6	6.9	7.4	-0.3	3.5	2.8	5.0	6.8
VESA1024	4.6	8.1	7.4	-0.3	3.5	2.8	5.6	6.8
SVGA II	4.6	7.1	7.5	-0.3	3.6	2.9	7.6	6.8
SVGA III	4.6	6.6	7.3	-0.3	3.5	2.8	4.9	6.8
VESA350	4.6	7.1	7.5	-0.3	3.6	2.9	7.6	6.7
VESA400	4.6	7.2	7.5	-0.3	3.6	2.9	7.6	6.7
VESA480	4.6	7.1	7.5	-0.3	3.6	2.9	7.6	6.7
MAC II	4.6	7.1	7.5	-0.3	3.6	2.7	7.2	6.7
COLOR 64K	4.6	6.3	7.1	-0.2	3.4	2.7	6.3	6.5

IC	IC305 (LA7856)							
PIN / MODE	9	10	11	12	13	14	15	16
VGA-350	6.2	13.0	6.5	5.0	0.0	0.0	2.2	4.6
VGA-400	6.2	13.0	6.5	5.0	0.0	0.0	2.2	4.6
VGA-480	6.2	13.0	6.5	5.0	0.0	0.0	2.2	4.6
SVGA I	6.0	13.0	6.5	5.1	0.0	0.0	2.2	4.6
8514A	6.0	13.0	6.5	5.1	0.0	0.0	2.2	4.6
8514NI	6.1	13.0	6.5	4.7	0.0	0.0	2.2	4.5
VESA1024	6.1	13.0	6.5	5.0	0.0	0.0	2.2	4.6
SVGA II	5.9	13.0	6.5	5.1	0.0	0.0	2.2	4.5
SVGA III	6.1	13.0	6.5	4.7	0.0	0.0	2.2	4.5
VESA350	5.9	13.0	6.5	5.1	0.0	0.0	2.2	4.5
VESA400	5.9	13.0	6.5	5.1	0.0	0.0	2.2	4.5
VESA480	5.9	13.0	6.5	5.1	0.0	0.0	2.2	4.5
MAC II	6.0	13.0	6.5	5.0	0.0	0.0	2.2	4.5
COLOR 64K	5.8	13.0	6.3	5.1	0.0	0.0	2.2	4.4

The following voltage record was measured with cross-hatch pattern.

MAIN BOARD:

Integration Circuit

TABLE 37

IC	IC305 (LA7856)			
PIN / MODE	17	18	19	20
VGA-350	0.3	6.0	6.4	13.0
VGA-400	0.3	6.0	6.4	13.0
VGA-480	0.3	6.1	6.4	13.0
SVGA I	0.3	6.3	6.4	13.0
8514A	0.3	5.6	6.3	13.0
8514NI	0.3	5.9	6.2	13.0
VESA1024	0.3	5.8	6.3	13.0
SVGA II	0.3	5.9	6.3	13.0
SVGA III	0.3	5.6	6.2	13.0
VESA350	0.3	5.7	6.3	13.0
VESA400	0.3	5.7	6.3	13.0
VESA480	0.3	5.7	6.3	13.0
MAC II	0.3	5.8	6.3	13.0
COLOR 64K	0.3	5.7	6.2	13.0

TABLE 38

IC	IC307 (UPD4066)							
PIN / MODE	1	2	3	4	5	6	7	8
VGA-350	1.4	6.8	6.8	6.9	16.0	16.0	0.0	5.1
VGA-400	1.4	6.8	6.8	6.9	16.0	16.0	0.0	5.1
VGA-480	1.4	6.8	6.8	6.9	16.0	16.0	0.0	5.1
SVGA I	1.4	6.7	6.7	6.9	16.0	16.0	0.0	5.1
8514A	1.4	6.7	6.7	6.8	16.0	16.0	0.0	5.2
8514NI	6.8	6.8	6.8	14.0	0.0	16.0	0.0	5.1
VESA1024	6.8	6.8	6.8	14.0	0.0	16.0	0.0	5.1
SVGA II	1.4	6.7	6.7	6.7	16.0	16.0	0.0	5.1
SVGA III	6.7	6.6	6.6	14.0	0.0	1.3	0.0	0.0
VESA350	1.4	6.7	6.7	6.7	16.0	16.0	0.0	5.1
VESA400	1.4	6.7	6.7	6.7	16.0	16.0	0.0	5.1
VESA480	1.4	6.7	6.7	6.7	16.0	16.0	0.0	5.1
MAC II	1.4	6.7	6.7	6.7	16.0	16.0	0.0	5.1
COLOR 64K	6.5	6.5	6.5	14.0	0.0	16.0	0.0	5.1

The following voltage record was measured with cross-hatch pattern.

MAIN BOARD:

Integration Circuit

TABLE 38

IC	IC307 (UPD4066)					
PIN / MODE	9	10	11	12	13	14
VGA-350	0.0	0.0	5.1	16.0	0.0	16.0
VGA-400	0.0	0.0	5.1	16.0	0.0	16.0
VGA-480	0.0	0.0	5.1	16.0	0.0	16.0
SVGA I	0.0	0.0	5.1	16.0	0.0	16.0
8514A	0.0	0.0	5.2	16.0	0.0	16.0
8514NI	0.0	0.0	5.1	16.0	14.5	16.0
VESA1024	0.0	0.0	5.1	16.0	14.5	16.0
SVGA II	0.0	0.0	5.1	16.0	0.0	16.0
SVGA III	0.0	0.0	0.0	1.3	14.5	16.0
VESA350	0.0	0.0	5.1	16.0	0.0	16.0
VESA400	0.0	0.0	5.1	16.0	0.0	16.0
VESA480	0.0	0.0	5.1	16.0	0.0	16.0
MAC II	0.0	0.0	5.1	16.0	0.0	16.0
COLOR 64K	0.0	0.0	5.1	16.0	14.5	16.0

TABLE 39

IC	IC308 (UPD4557C)							
PIN / MODE	1	2	3	4	5	6	7	8
VGA-350	7.4	6.2	6.2	0.0	6.2	7.3	1.4	16.0
VGA-400	7.4	6.2	6.2	0.0	6.2	7.3	1.4	16.0
VGA-480	7.4	6.2	6.2	0.0	6.2	7.3	1.4	16.0
SVGA I	10.1	6.9	6.9	0.0	6.9	7.3	1.4	16.0
8514A	10.4	6.9	6.9	0.0	6.9	7.3	1.4	16.0
8514NI	15.4	8.2	9.5	0.0	9.5	9.5	7.8	16.0
VESA1024	15.4	8.2	11.0	0.0	11.0	11.0	12.6	16.0
SVGA II	12.1	7.4	7.4	0.0	7.4	7.5	1.5	16.0
SVGA III	15.3	8.2	9.4	0.0	9.4	9.4	7.6	16.0
VESA350	12.1	7.4	7.4	0.0	7.4	7.5	1.5	16.0
VESA400	12.1	7.4	7.4	0.0	7.4	7.5	1.4	16.0
VESA480	12.1	7.4	7.4	0.0	7.4	7.5	1.5	16.0
MAC II	9.9	6.8	6.8	0.0	6.8	7.3	1.4	16.0
COLOR 64K	15.3	8.2	12.4	0.0	12.4	11.8	15.3	16.0

The following voltage record was measured with cross-hatch pattern.

MAIN BOARD:

Plug

TABLE 40

PLUG	P 3 1 0					
PIN / MODE	1 30-52K	2 30-33K	3 30-39K	4 H-SIZE	5 MUTE	6 GND
VGA-350	10.2	10.0	10.8	5.4	0.0	0.0
VGA-400	10.2	10.0	10.8	5.8	0.0	0.0
VGA-480	10.3	10.0	10.8	5.9	0.0	0.0
SVGA I	9.8	0.1	10.4	6.2	0.0	0.0
8514A	9.8	0.1	10.4	5.5	0.0	0.0
8514NI	9.1	0.1	0.1	6.5	0.0	0.0
VESA1024	0.5	1.2	1.2	6.5	0.0	0.0
SVGA II	9.9	0.1	10.4	6.5	0.0	0.0
SVGA III	8.3	0.1	0.1	6.4	0.0	0.0
VESA350	9.8	0.1	10.4	5.9	0.0	0.0
VESA400	9.8	0.1	10.4	6.4	0.0	0.0
VESA480	9.8	0.1	10.4	6.2	0.0	0.0
MAC II	9.8	0.1	10.4	6.5	0.0	0.0
COLOR 64K	0.2	0.1	0.9	6.5	0.0	0.0

TABLE 41

PLUG	P 3 0 1		
PIN / MODE	1 GND	2 V-SYNC	3 H-SYNC
VGA-350	0.0	0.2	6.0
VGA-400	0.0	0.1	5.9
VGA-480	0.0	0.2	5.9
SVGA I	0.0	0.2	6.3
8514A	0.0	0.1	5.7
8514NI	0.0	0.2	5.8
VESA1024	0.0	0.2	5.7
SVGA II	0.0	0.1	5.8
SVGA III	0.0	0.1	5.7
VESA350	0.0	0.2	6.5
VESA400	0.0	0.1	6.5
VESA480	0.0	0.2	6.5
MAC II	0.0	0.2	6.3
COLOR 64K	0.0	0.1	6.1

TABLE 42

PLUG	P 3 0 5	
PIN / MODE	1 ABL	2 GND
VGA-350	12.5	0.0
VGA-400	12.5	0.0
VGA-480	12.5	0.0
SVGA I	12.5	0.0
8514A	12.5	0.0
8514NI	12.5	0.0
VESA1024	12.5	0.0
SVGA II	12.5	0.0
SVGA III	12.5	0.0
VESA350	12.5	0.0
VESA400	12.5	0.0
VESA480	12.5	0.0
MAC II	12.5	0.0
COLOR 64K	12.5	0.0

The following voltage record was measured with cross-hatch pattern.

MAIN BOARD:

Plug

TABLE 43

PLUG	P309					
PIN / MODE	1	2	3 H-POS	4 V-POS	5 V-SIZE	6
VGA-350	12.0	5.0	2.2	4.6	6.4	25.0
VGA-400	12.0	5.0	2.2	7.2	4.6	25.0
VGA-480	12.0	5.0	2.2	7.1	4.2	25.0
SVGA I	12.0	5.0	2.5	9.6	3.7	25.0
8514A	12.0	5.0	2.6	7.7	4.7	25.0
8514NI	12.0	5.0	3.0	8.3	3.8	25.0
VESA1024	12.0	5.0	1.4	8.6	4.1	25.0
SVGA II	12.0	5.0	2.9	6.7	3.8	25.0
SVGA III	12.0	5.0	3.6	13.3	4.7	25.0
VESA350	12.0	5.0	2.9	4.4	7.2	25.0
VESA400	12.0	5.0	2.7	5.1	5.1	25.0
VESA480	12.0	5.0	2.9	7.9	4.4	25.0
MAC II	12.0	5.0	3.0	3.3	4.4	25.0
COLOR 64K	12.0	5.0	4.0	7.6	3.6	25.0

TABLE 44

PLUG	P306
PIN / MODE	4 G1
VGA-350	-36.4
VGA-400	-36.4
VGA-480	-36.4
SVGA I	-36.4
8514A	-36.4
8514NI	-36.4
VESA1024	-36.4
SVGA II	-36.4
SVGA III	-36.4
VESA350	-36.4
VESA400	-36.4
VESA480	-36.4
MAC II	-36.4
COLOR 64K	-36.4

TABLE 45

PLUG	P313			
PIN / MODE	1	2	3	4
VGA-350	16.0	0.0	11.2	2.9
VGA-400	16.0	0.0	11.5	2.9
VGA-480	16.0	0.0	11.6	2.5
SVGA I	16.0	0.0	11.8	2.3
8514A	16.0	0.0	11.6	3.5
8514NI	16.0	0.0	11.7	2.5
VESA1024	16.0	0.0	11.7	2.9
SVGA II	16.0	0.0	11.7	2.5
SVGA III	16.0	0.0	11.5	3.9
VESA350	16.0	0.0	11.2	3.4
VESA400	16.0	0.0	11.4	3.4
VESA480	16.0	0.0	11.6	3.0
MAC II	16.0	0.0	11.6	2.8
COLOR 64K	16.0	0.0	11.7	2.5

The following voltage record was measured with cross-hatch pattern.

MAIN BOARD:

Plug

TABLE 46

PLUG	P 4 0 1		
PIN / MODE	1	2	3
VGA-350	62.7	0.0	218.3
VGA-400	63.8	0.0	218.3
VGA-480	64.1	0.0	218.1
SVGA I	73.0	0.0	218.2
8514A	71.1	0.0	217.3
8514NI	99.7	0.0	216.8
VESA1024	116.0	0.0	217.9
SVGA II	80.6	0.0	217.2
SVGA III	98.0	0.0	217.8
VESA350	78.0	0.0	217.8
VESA400	80.0	0.0	217.9
VESA480	79.1	0.0	217.9
MAC II	73.7	0.0	217.9
COLOR 64K	134.1	0.0	216.4

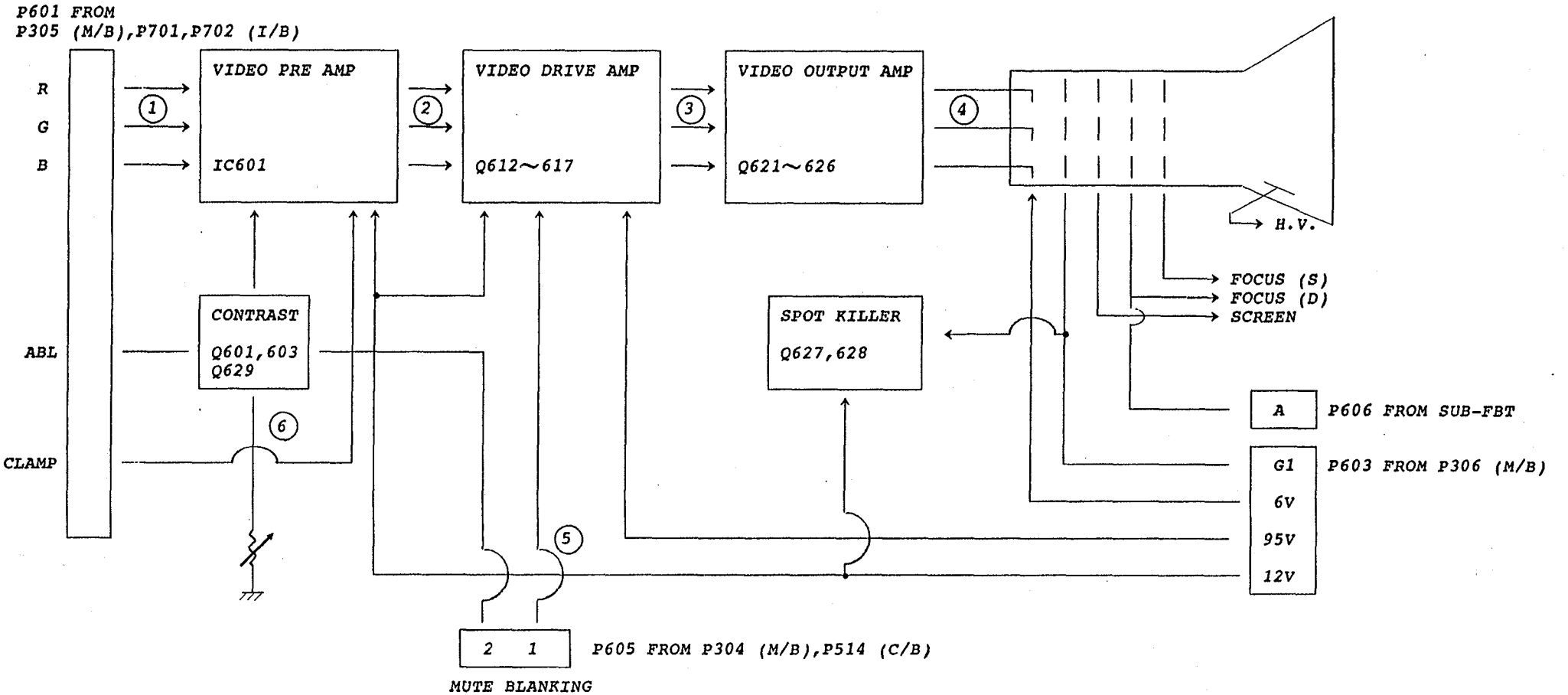
TABLE 47

PLUG	P 4 0 3		
PIN / MODE	1	2 ON CLICK	3
VGA-350	24.7	-36.4	-49.2
VGA-400	24.7	-36.4	-49.2
VGA-480	24.7	-36.4	-49.2
SVGA I	24.7	-36.4	-49.3
8514A	24.7	-36.4	-49.2
8514NI	24.7	-36.4	-49.4
VESA1024	24.7	-36.4	-49.3
SVGA II	24.7	-36.4	-49.3
SVGA III	24.7	-36.4	-49.4
VESA350	24.7	-36.4	-49.3
VESA400	24.7	-36.4	-49.3
VESA480	24.7	-36.4	-49.3
MAC II	24.7	-36.4	-49.3
COLOR 64K	24.7	-36.4	-49.3

NOTE:THE VOLTAGE OF G1 (P306 4TH PIN) AS P403 PIN 2, ITS' VARIATION BETWEEN -24.9 TO -48.8 VOLT.

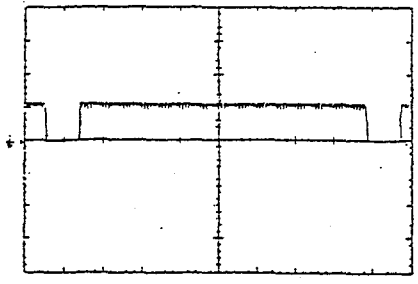
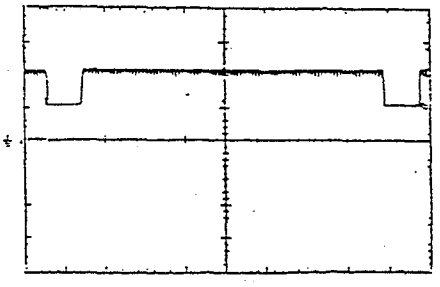
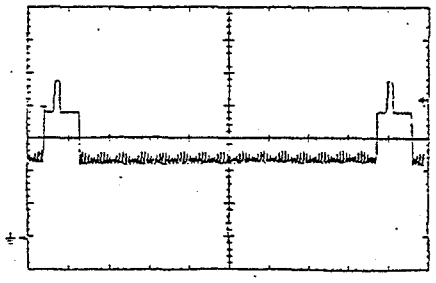
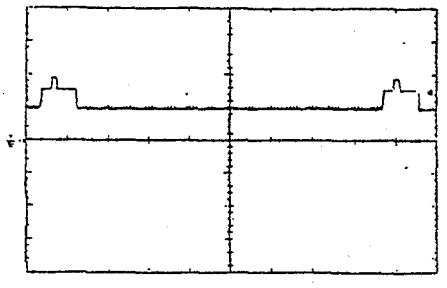
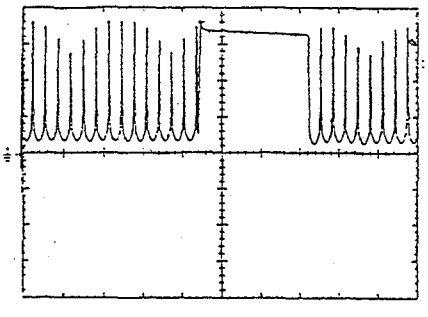
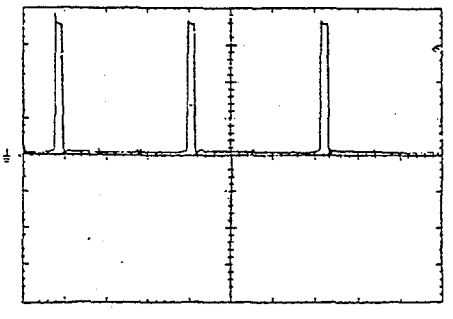
4.5 CRT BOARD

4.5.1 SUB-FUNCTION BLOCK (WITH WAVEFORM)



LOCATION OF WAVEFORM OR VOLTAGE:

(1) P601 PIN 3 G SIGNAL
(2) IC601 PIN 25
(3) Q624 BASE
(4) CATHODE OF GREEN
(5) P605 PIN 1 BLANKING
(6) P601 PIN 10 CLAMP

① 0.7Vpp 60HZ	② 2.2Vpp 60HZ
	
③ 52Vpp 60HZ	④ 50Vpp 60HZ
	
⑤ 6.8Vpp H. & V. SYNC.	⑥ 3.6Vpp 31.5KHZ
	

4.5.2 VOLTAGE OF BLOCK'S PART

The following voltage record was measured with cross-hatch pattern.

CRT BOARD:

Transister

TABLE 48

TR	Q601			Q603			Q612		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	10.6	12.0	9.9	12.5	0.0	10.6	10.9	10.2	3.8
VGA-400	10.6	12.0	9.9	12.5	0.0	10.6	10.9	10.2	3.8
VGA-480	10.6	12.0	9.9	12.5	0.0	10.6	10.9	10.2	3.8
SVGA I	10.6	12.0	9.9	12.5	0.0	10.6	10.9	10.2	3.8
8514A	10.6	12.0	9.9	12.5	0.0	10.6	10.9	10.2	3.8
8514NI	10.6	12.0	9.9	12.5	0.0	10.6	10.9	10.2	3.8
VESA1024	10.6	12.0	9.9	12.5	0.0	10.6	10.9	10.2	3.8
SVGA II	10.6	12.0	9.9	12.5	0.0	10.6	10.9	10.2	3.8
SVGA III	10.6	12.0	9.9	12.5	0.0	10.6	10.9	10.2	3.8
VESA350	10.6	12.0	9.9	12.5	0.0	10.6	10.9	10.2	3.8
VESA400	10.6	12.0	9.9	12.5	0.0	10.6	10.9	10.2	3.8
VESA480	10.6	12.0	9.9	12.5	0.0	10.6	10.9	10.2	3.8
MAC II	10.6	12.0	9.9	12.5	0.0	10.6	10.9	10.2	3.8
COLOR 64K	10.6	12.0	9.9	12.5	0.0	10.6	10.9	10.2	3.8

TR	Q613			Q614			Q615		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	4.3	10.2	3.8	10.9	48.9	10.2	4.0	10.2	3.5
VGA-400	4.3	10.2	3.8	10.9	48.9	10.2	4.0	10.2	3.5
VGA-480	4.3	10.2	3.8	10.9	48.9	10.2	4.0	10.2	3.5
SVGA I	4.3	10.2	3.8	10.9	48.9	10.2	4.0	10.2	3.5
8514A	4.3	10.2	3.8	10.9	48.9	10.2	4.0	10.2	3.5
8514NI	4.3	10.2	3.8	10.9	48.9	10.2	4.0	10.2	3.5
VESA1024	4.3	10.2	3.8	10.9	48.9	10.2	4.0	10.2	3.5
SVGA II	4.3	10.2	3.8	10.9	48.9	10.2	4.0	10.2	3.5
SVGA III	4.3	10.2	3.8	10.9	48.9	10.2	4.0	10.2	3.5
VESA350	4.3	10.2	3.8	10.9	48.9	10.2	4.0	10.2	3.5
VESA400	4.3	10.2	3.8	10.9	48.9	10.2	4.0	10.2	3.5
VESA480	4.3	10.2	3.8	10.9	48.9	10.2	4.0	10.2	3.5
MAC II	4.3	10.2	3.8	10.9	48.9	10.2	4.0	10.2	3.5
COLOR 64K	4.3	10.2	3.8	10.9	48.9	10.2	4.0	10.2	3.5

The following voltage record was measured with cross-hatch pattern.

CRT BOARD:

Transister

TABLE 49

TR	Q616			Q617			Q621		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	10.9	42.9	10.2	4.5	10.2	3.9	45.3	94.9	45.8
VGA-400	10.9	42.9	10.2	4.5	10.2	3.9	45.3	94.9	45.8
VGA-480	10.9	42.9	10.2	4.5	10.2	3.9	45.3	94.9	45.8
SVGA I	10.9	42.9	10.2	4.5	10.2	3.9	45.3	94.9	45.8
8514A	10.9	42.9	10.2	4.5	10.2	3.9	45.3	94.9	45.8
8514NI	10.9	42.9	10.2	4.5	10.2	3.9	45.3	94.9	45.8
VESA1024	10.9	42.9	10.2	4.5	10.2	3.9	45.3	94.9	45.8
SVGA II	10.9	42.9	10.2	4.5	10.2	3.9	45.3	94.9	45.8
SVGA III	10.9	42.9	10.2	4.5	10.2	3.9	45.3	94.9	45.8
VESA350	10.9	42.9	10.2	4.5	10.2	3.9	45.3	94.9	45.8
VESA400	10.9	42.9	10.2	4.5	10.2	3.9	45.3	94.9	45.8
VESA480	10.9	42.9	10.2	4.5	10.2	3.9	45.3	94.9	45.8
MAC II	10.9	42.9	10.2	4.5	10.2	3.9	45.3	94.9	45.8
COLOR 64K	10.9	42.9	10.2	4.5	10.2	3.9	45.3	94.9	45.8

TR	Q622			Q623			Q624		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	45.3	0.0	45.8	48.9	94.9	49.4	48.9	0.0	49.4
VGA-400	45.3	0.0	45.8	48.9	94.9	49.4	48.9	0.0	49.4
VGA-480	45.3	0.0	45.8	48.9	94.9	49.4	48.9	0.0	49.4
SVGA I	45.3	0.0	45.8	48.9	94.9	49.4	48.9	0.0	49.4
8514A	45.3	0.0	45.8	48.9	94.9	49.4	48.9	0.0	49.4
8514NI	45.3	0.0	45.8	48.9	94.9	49.4	48.9	0.0	49.4
VESA1024	45.3	0.0	45.8	48.9	94.9	49.4	48.9	0.0	49.4
SVGA II	45.3	0.0	45.8	48.9	94.9	49.4	48.9	0.0	49.4
SVGA III	45.3	0.0	45.8	48.9	94.9	49.4	48.9	0.0	49.4
VESA350	45.3	0.0	45.8	48.9	94.9	49.4	48.9	0.0	49.4
VESA400	45.3	0.0	45.8	48.9	94.9	49.4	48.9	0.0	49.4
VESA480	45.3	0.0	45.8	48.9	94.9	49.4	48.9	0.0	49.4
MAC II	45.3	0.0	45.8	48.9	94.9	49.4	48.9	0.0	49.4
COLOR 64K	45.3	0.0	45.8	48.9	94.9	49.4	48.9	0.0	49.4

The following voltage record was measured with cross-hatch pattern.

CRT BOARD:

Transister

TABLE 50

TR	Q625			Q626			Q627		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	43.5	94.9	43.0	43.5	0.0	43.0	0.7	0.0	0.0
VGA-400	43.5	94.9	43.0	43.5	0.0	43.0	0.7	0.0	0.0
VGA-480	43.5	94.9	43.0	43.5	0.0	43.0	0.7	0.0	0.0
SVGA I	43.5	94.9	43.0	43.5	0.0	43.0	0.7	0.0	0.0
8514A	43.5	94.9	43.0	43.5	0.0	43.0	0.7	0.0	0.0
8514NI	43.5	94.9	43.0	43.5	0.0	43.0	0.7	0.0	0.0
VESA1024	43.5	94.9	43.0	43.5	0.0	43.0	0.7	0.0	0.0
SVGA II	43.5	94.9	43.0	43.5	0.0	43.0	0.7	0.0	0.0
SVGA III	43.5	94.9	43.0	43.5	0.0	43.0	0.7	0.0	0.0
VESA350	43.5	94.9	43.0	43.5	0.0	43.0	0.7	0.0	0.0
VESA400	43.5	94.9	43.0	43.5	0.0	43.0	0.7	0.0	0.0
VESA480	43.5	94.9	43.0	43.5	0.0	43.0	0.7	0.0	0.0
MAC II	43.5	94.9	43.0	43.5	0.0	43.0	0.7	0.0	0.0
COLOR 64K	43.5	94.9	43.0	43.5	0.0	43.0	0.7	0.0	0.0

TR	Q628			Q629		
PIN / MODE	B	C	E	B	C	E
VGA-350	0.0	94.5	0.0	0.0	7.5	0.0
VGA-400	0.0	94.5	0.0	0.0	7.5	0.0
VGA-480	0.0	94.5	0.0	0.0	7.5	0.0
SVGA I	0.0	94.5	0.0	0.0	7.5	0.0
8514A	0.0	94.5	0.0	0.0	7.5	0.0
8514NI	0.0	94.5	0.0	0.0	7.5	0.0
VESA1024	0.0	94.5	0.0	0.0	7.5	0.0
SVGA II	0.0	94.5	0.0	0.0	7.5	0.0
SVGA III	0.0	94.5	0.0	0.0	7.5	0.0
VESA350	0.0	94.5	0.0	0.0	7.5	0.0
VESA400	0.0	94.5	0.0	0.0	7.5	0.0
VESA480	0.0	94.5	0.0	0.0	7.5	0.0
MAC II	0.0	94.5	0.0	0.0	7.5	0.0
COLOR 64K	0.0	94.5	0.0	0.0	7.5	0.0

The following voltage record was measured with cross-hatch pattern.

CRT board:

Integration Circuit

TABLE 51

IC	IC601 (M51387P)							
PIN / MODE	2	3	4	6	7	8	10	11
VGA-350	12.0	2.7	5.7	12.0	2.7	5.4	12.0	2.7
VGA-400	12.0	2.7	5.7	12.0	2.7	5.4	12.0	2.7
VGA-480	12.0	2.7	5.7	12.0	2.7	5.4	12.0	2.7
SVGA I	12.0	2.7	5.7	12.0	2.7	5.4	12.0	2.7
8514A	12.0	2.7	5.7	12.0	2.7	5.4	12.0	2.7
8514NI	12.0	2.7	5.7	12.0	2.7	5.4	12.0	2.7
VESA1024	12.0	2.7	5.7	12.0	2.7	5.4	12.0	2.7
SVGA II	12.0	2.7	5.7	12.0	2.7	5.4	12.0	2.7
SVGA III	12.0	2.7	5.7	12.0	2.7	5.4	12.0	2.7
VESA350	12.0	2.7	5.7	12.0	2.7	5.4	12.0	2.7
VESA400	12.0	2.7	5.7	12.0	2.7	5.4	12.0	2.7
VESA480	12.0	2.7	5.7	12.0	2.7	5.4	12.0	2.7
MAC II	12.0	2.7	5.7	12.0	2.7	5.4	12.0	2.7
COLOR 64K	12.0	2.7	5.7	12.0	2.7	5.4	12.0	2.7

IC	IC601 (M51387P)							
PIN / MODE	12	14	15	16	18	19	20	21
VGA-350	5.6	4.9~7.6	0.1	5.2	0.0	5.7	4.8	4.6
VGA-400	5.6	4.9~7.6	0.1	5.2	0.0	5.7	4.8	4.6
VGA-480	5.6	4.9~7.6	0.1	5.2	0.0	5.7	4.8	4.6
SVGA I	5.6	4.9~7.6	0.1	5.2	0.0	5.7	4.8	4.6
8514A	5.6	4.9~7.6	0.1	5.2	0.0	5.7	4.8	4.6
8514NI	5.6	4.9~7.6	0.1	5.2	0.0	5.7	4.8	4.6
VESA1024	5.6	4.9~7.6	0.1	5.2	0.0	5.7	4.8	4.6
SVGA II	5.6	4.9~7.6	0.1	5.2	0.0	5.7	4.8	4.6
SVGA III	5.6	4.9~7.6	0.1	5.2	0.0	5.7	4.8	4.6
VESA350	5.6	4.9~7.6	0.1	5.2	0.0	5.7	4.8	4.6
VESA400	5.6	4.9~7.6	0.1	5.2	0.0	5.7	4.8	4.6
VESA480	5.6	4.9~7.6	0.1	5.2	0.0	5.7	4.8	4.6
MAC II	5.6	4.9~7.6	0.1	5.2	0.0	5.7	4.8	4.6
COLOR 64K	5.6	4.9~7.6	0.1	5.2	0.0	5.7	4.8	4.6

The following voltage record was measured with cross-hatch pattern.

CRT board:

Integration Circuit

TABLE 51

IC	IC601 (M51387P)							
PIN / MODE	22	23	24	25	26	27	28	29
VGA-350	0.0	5.7	4.7	4.1	0.0	5.7	4.7	4.4
VGA-400	0.0	5.7	4.7	4.1	0.0	5.7	4.7	4.4
VGA-480	0.0	5.7	4.7	4.1	0.0	5.7	4.7	4.4
SVGA I	0.0	5.7	4.7	4.1	0.0	5.7	4.7	4.4
8514A	0.0	5.7	4.7	4.1	0.0	5.7	4.7	4.4
8514NI	0.0	5.7	4.7	4.1	0.0	5.7	4.7	4.4
VESA1024	0.0	5.7	4.7	4.1	0.0	5.7	4.7	4.4
SVGA II	0.0	5.7	4.7	4.1	0.0	5.7	4.7	4.4
SVGA III	0.0	5.7	4.7	4.1	0.0	5.7	4.7	4.4
VESA350	0.0	5.7	4.7	4.1	0.0	5.7	4.7	4.4
VESA400	0.0	5.7	4.7	4.1	0.0	5.7	4.7	4.4
VESA480	0.0	5.7	4.7	4.1	0.0	5.7	4.7	4.4
MAC II	0.0	5.7	4.7	4.1	0.0	5.7	4.7	4.4
COLOR 64K	0.0	5.7	4.7	4.1	0.0	5.7	4.7	4.4

IC	IC601
PIN / MODE	30
VGA-350	11.9
VGA-400	11.9
VGA-480	11.9
SVGA I	11.9
8514A	11.9
8514NI	11.9
VESA1024	11.9
SVGA II	11.9
SVGA III	11.9
VESA350	11.9
VESA400	11.9
VESA480	11.9
MAC II	11.9
COLOR 64K	11.9

The following voltage record was measured with cross-hatch pattern.

CRT BOARD:

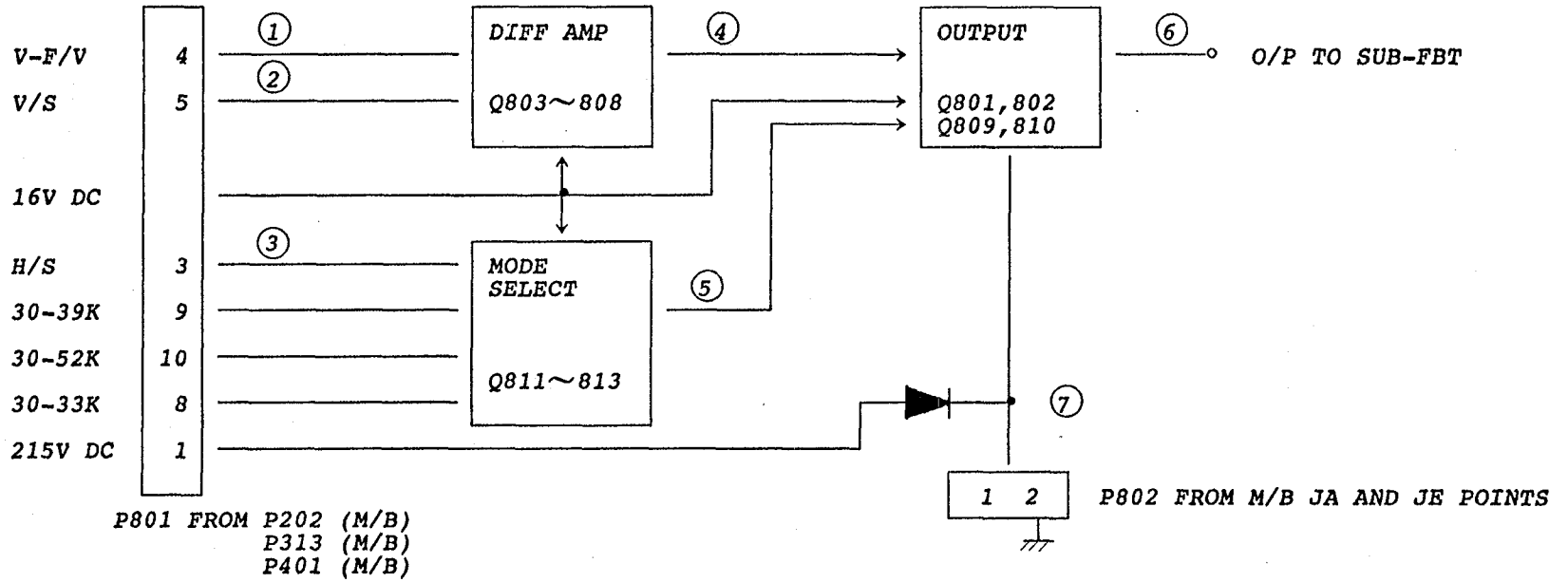
Plug

TABLE 52

PLUG	P 6 0 5	
PIN / MODE	1 BLANKING	2 MUTE
VGA-350	2.0	0.0
VGA-400	2.0	0.0
VGA-480	2.0	0.0
SVGA Ⅰ	2.0	0.0
8514A	2.0	0.0
8514NI	2.0	0.0
VESA1024	2.0	0.0
SVGA Ⅱ	2.0	0.0
SVGA Ⅲ	2.0	0.0
VESA350	2.0	0.0
VESA400	2.0	0.0
VESA480	2.0	0.0
MAC Ⅱ	2.0	0.0
COLOR 64K	2.0	0.0

4.6 DINAMIC FOCUSE BOARD

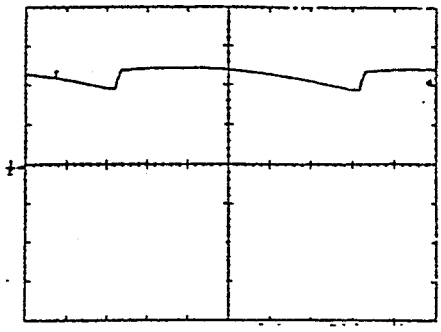
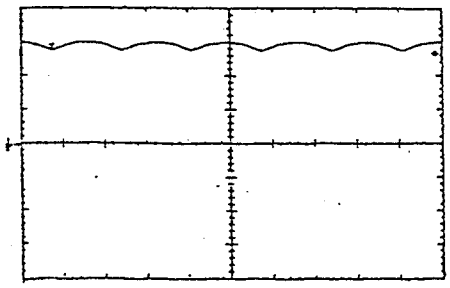
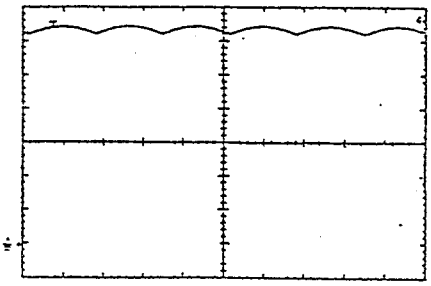
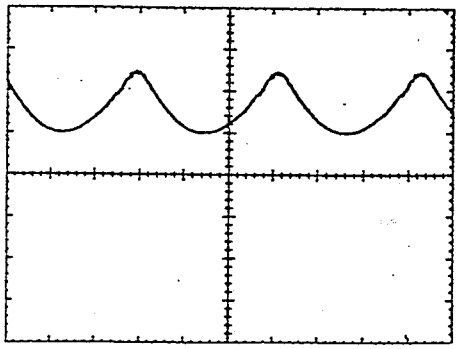
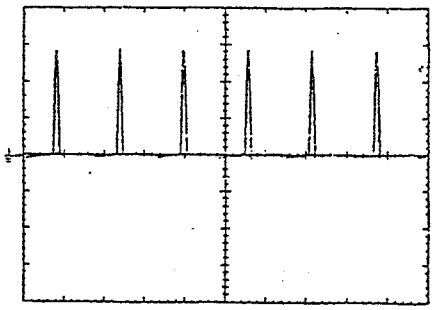
4.6.1 DINAMIC FOCUS BOARD (WITH WAVEFORM)



LOCATION OF WAVEFORM OR VOLTAGE:

① P801 PIN 4 V-F/V
SAME AS Q808 BASE VALUE
② P801 PIN 5 V/S
③ P801 PIN 3 H/S
④ Q806 COLLECTOR
⑤ C819 PLUS TERMINAL
⑥ O/P POINT
⑦ P802 PIN 1 THE TERMINAL CONNECT TO FD801

NOTE: THE PIN'S SYMBLE OF P801 & P802 ACCRODING TO PCB.

① 2Vpp 84HZ	④ 1.5Vpp 60HZ
	
⑤ 0.4Vpp 60HZ	⑥ 180Vpp 31.5KHZ
	
⑦ 880Vpp 31.5KHZ	
	

4.6.2 VOLTAGE OF BLOCK'S PART

The following voltage record was measured with cross-hatch pattern.

FOCUS BOARD:

Transister

TABLE 53

TR	Q801			Q802			Q803		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	15.9	37.6~38.5	15.4	14.2	15.3	13.5	12.6	2.6	13.4
VGA-400	15.9	37.6~38.5	15.4	14.2	15.4	13.5	12.6	2.6	13.4
VGA-480	15.9	37.6~38.5	15.4	14.2	15.4	13.6	12.6	2.6	13.4
SVGA I	15.9	37.6~38.5	15.4	14.3	15.4	13.7	12.6	2.6	13.4
8514A	15.9	37.6~38.5	15.4	14.3	15.4	13.6	12.6	2.6	13.4
8514NI	15.9	37.6~38.5	15.4	14.4	15.4	13.8	12.6	2.6	13.4
VESA1024	15.9	37.6~38.5	15.4	14.5	15.4	13.8	12.6	2.6	13.4
SVGA II	15.9	37.6~38.5	15.4	14.5	15.4	13.8	12.6	2.6	13.4
SVGA III	15.9	37.6~38.5	15.4	14.5	15.4	13.8	12.6	2.6	13.4
VESA350	15.9	37.6~38.5	15.4	14.3	15.4	13.7	12.6	2.6	13.4
VESA400	15.9	37.6~38.5	15.4	14.4	15.4	13.9	12.6	2.6	13.4
VESA480	15.9	37.6~38.5	15.4	14.4	15.4	13.8	12.6	2.6	13.4
MAC II	15.9	37.6~38.5	15.4	14.4	15.4	13.7	12.6	2.6	13.4
COLOR 64K	15.9	37.6~38.5	15.4	14.5	15.4	13.9	12.6	2.6	13.4

TR	Q804			Q805			Q806		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	5.1	15.9	0.5	1.2	4.6	0.5	5.2	14.1	4.6
VGA-400	5.1	15.9	0.5	1.1	4.6	0.5	5.2	14.0	4.6
VGA-480	5.1	15.9	0.5	1.1	4.6	0.5	5.2	14.4	4.6
SVGA I	5.1	15.9	0.5	1.2	4.6	0.5	5.2	14.5	4.6
8514A	5.1	15.9	0.5	1.1	4.6	0.5	5.2	13.7	4.6
8514NI	5.1	15.9	0.5	1.1	4.6	0.5	5.2	14.4	4.6
VESA1024	5.1	15.9	0.5	1.2	4.6	0.5	5.2	14.1	4.6
SVGA II	5.1	15.9	0.5	1.1	4.6	0.5	5.2	14.4	4.6
SVGA III	5.1	15.9	0.5	1.1	4.6	0.5	5.2	14.0	4.6
VESA350	5.1	15.9	0.5	1.1	4.6	0.5	5.2	13.7	4.6
VESA400	5.1	15.9	0.5	1.2	4.6	0.5	5.2	13.7	4.6
VESA480	5.1	15.9	0.5	1.1	4.6	0.5	5.2	14.0	4.6
MAC II	5.1	15.9	0.5	1.2	4.6	0.5	5.2	14.2	4.6
COLOR 64K	5.1	15.9	0.5	1.2	4.6	0.5	5.2	14.4	4.6

The following voltage record was measured with cross-hatch pattern.

FOCUS BOARD:

Transister

TABLE 54

TR	Q807			Q808			Q809		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	2.3	0.0	2.8	2.9	16.0	2.3	12.6	0.0	13.4
VGA-400	2.3	0.0	2.8	2.9	16.0	2.3	12.6	0.0	13.4
VGA-480	1.9	0.0	2.4	2.5	16.0	1.9	12.6	0.0	13.4
SVGA I	1.7	0.0	2.3	2.3	16.0	1.7	12.6	0.0	13.3
8514A	2.9	0.0	3.5	3.5	16.0	2.9	12.5	0.0	13.3
8514NI	1.8	0.0	2.4	2.5	16.0	1.8	12.6	0.0	13.3
VESA1024	2.3	0.0	2.8	2.9	16.0	2.3	12.6	0.0	13.4
SVGA II	1.9	0.0	2.4	2.5	16.0	1.9	12.6	0.0	13.4
SVGA III	2.3	0.0	2.9	3.0	16.0	2.3	12.6	0.0	13.3
VESA350	2.8	0.0	3.3	3.4	16.0	2.8	12.6	0.0	13.4
VESA400	2.8	0.0	3.3	3.4	16.0	2.8	12.6	0.0	13.4
VESA480	2.4	0.0	2.9	3.0	16.0	2.4	12.6	0.0	13.4
MAC II	2.1	0.0	2.7	2.7	16.0	2.1	12.6	0.0	13.4
COLOR 64K	1.9	0.0	2.4	2.5	16.0	1.9	12.6	0.0	13.4

TR	Q810			Q811			Q812		
PIN / MODE	B	C	E	B	C	E	B	C	E
VGA-350	12.6	0.0	13.3	10.2	0.0	7.8	10.8	0.0	7.8
VGA-400	12.6	0.0	13.3	10.2	0.0	8.0	10.8	0.0	8.0
VGA-480	12.6	0.0	13.3	10.3	0.0	8.0	10.8	0.0	8.0
SVGA I	12.6	0.0	13.3	9.9	0.0	7.8	10.5	0.0	7.8
8514A	12.5	0.0	13.3	9.8	0.0	7.6	10.4	0.0	7.7
8514NI	12.6	0.0	13.3	9.1	0.0	7.2	0.1	0.0	0.8
VESA1024	12.6	0.0	13.3	0.6	0.0	1.1	1.2	0.0	1.8
SVGA II	12.6	0.0	13.3	9.9	0.0	8.6	10.5	0.0	8.6
SVGA III	12.5	0.0	13.3	8.3	0.0	7.2	0.1	0.0	0.7
VESA350	12.5	0.0	13.3	9.8	0.0	8.3	10.4	0.0	8.4
VESA400	12.5	0.0	13.3	9.8	0.0	8.5	10.4	0.0	8.6
VESA480	12.6	0.0	13.3	9.8	0.0	8.4	10.4	0.0	8.5
MAC II	12.6	0.0	13.3	9.9	0.0	7.9	10.4	0.0	7.9
COLOR 64K	12.6	0.0	13.3	0.2	0.0	0.8	0.9	0.0	1.6

The following voltage record was measured with cross-hatch pattern.

FOCUS BOARD:

Transister

TABLE 55

TR	Q 8 1 3		
PIN / MODE	B	C	E
VGA-350	10.8	0.0	7.8
VGA-400	10.8	0.0	8.0
VGA-480	10.8	0.0	8.0
SVGA I	0.1	0.0	0.7
8514A	0.1	0.0	0.7
8514NI	0.1	0.0	0.7
VESA1024	1.2	0.0	1.8
SVGA II	0.1	0.0	0.7
SVGA III	0.1	0.0	0.7
VESA350	0.1	0.0	0.7
VESA400	0.1	0.0	0.7
VESA480	0.1	0.0	0.7
MAC II	0.1	0.0	0.7
COLOR 64K	0.1	0.0	0.7

The following voltage record was measured with cross-hatch pattern.

FOCUS BOARD:

Plug

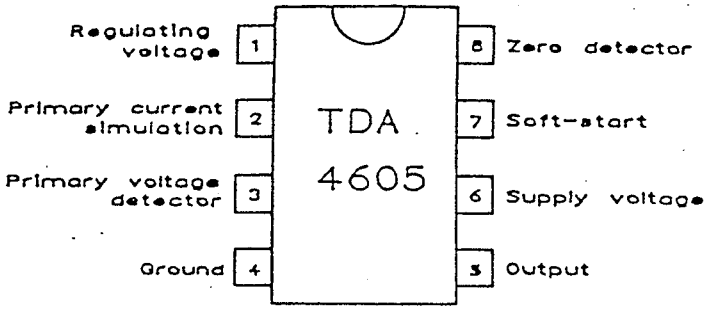
TABLE 56

PLUG	P801
PIN / MODE	H/S
VGA-350	62.6
VGA-400	63.7
VGA-480	64.0
SVGA I	70.6
8514A	70.0
8514NI	97.5
VESA1024	115.0
SVGA II	79.6
SVGA III	97.2
VESA350	77.8
VESA400	79.5
VESA480	78.8
MAC II	72.9
COLOR 64K	133.7

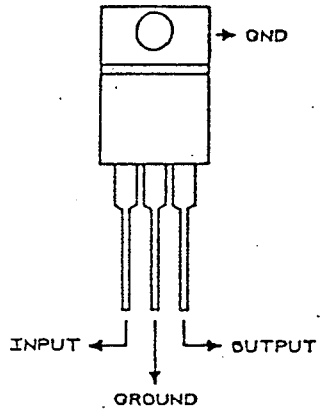
5.IC CONFIGURATION AND TRANSISTOR OUTLINE

IC.

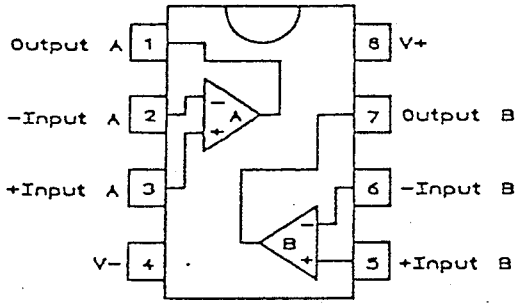
(1) IC101 (TDA4605)



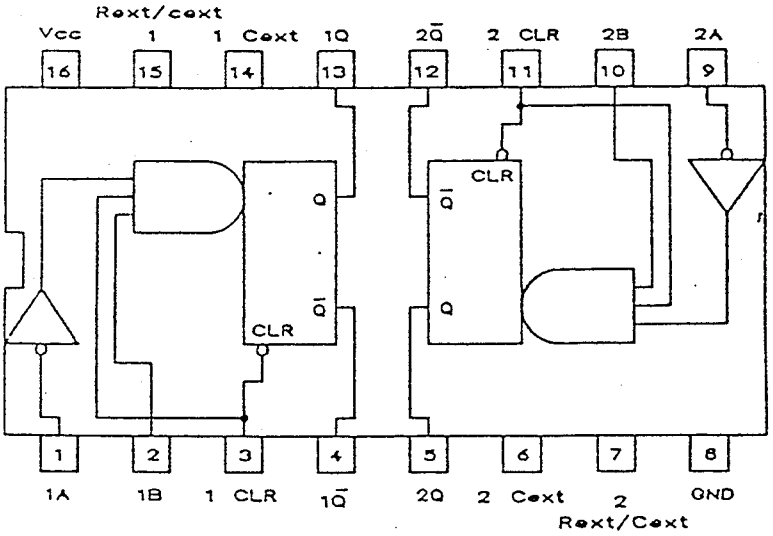
(2) IC102,103 (7805,7812)



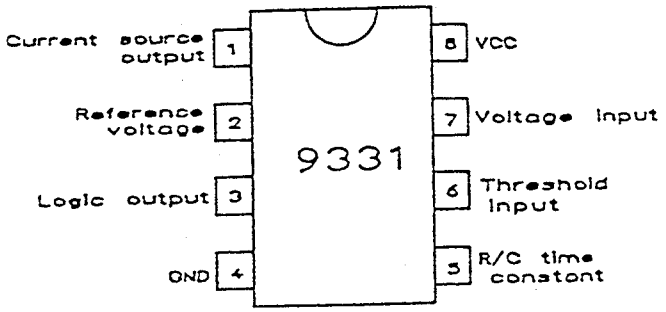
(3) IC301,303,308 (4557)



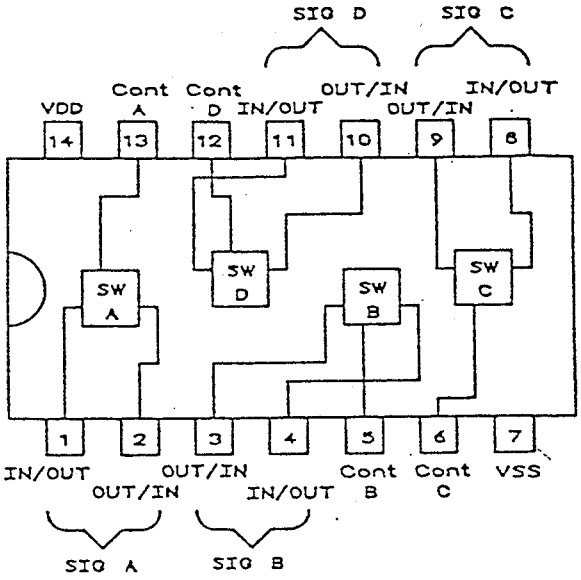
(4) IC105,702 (74LS123)



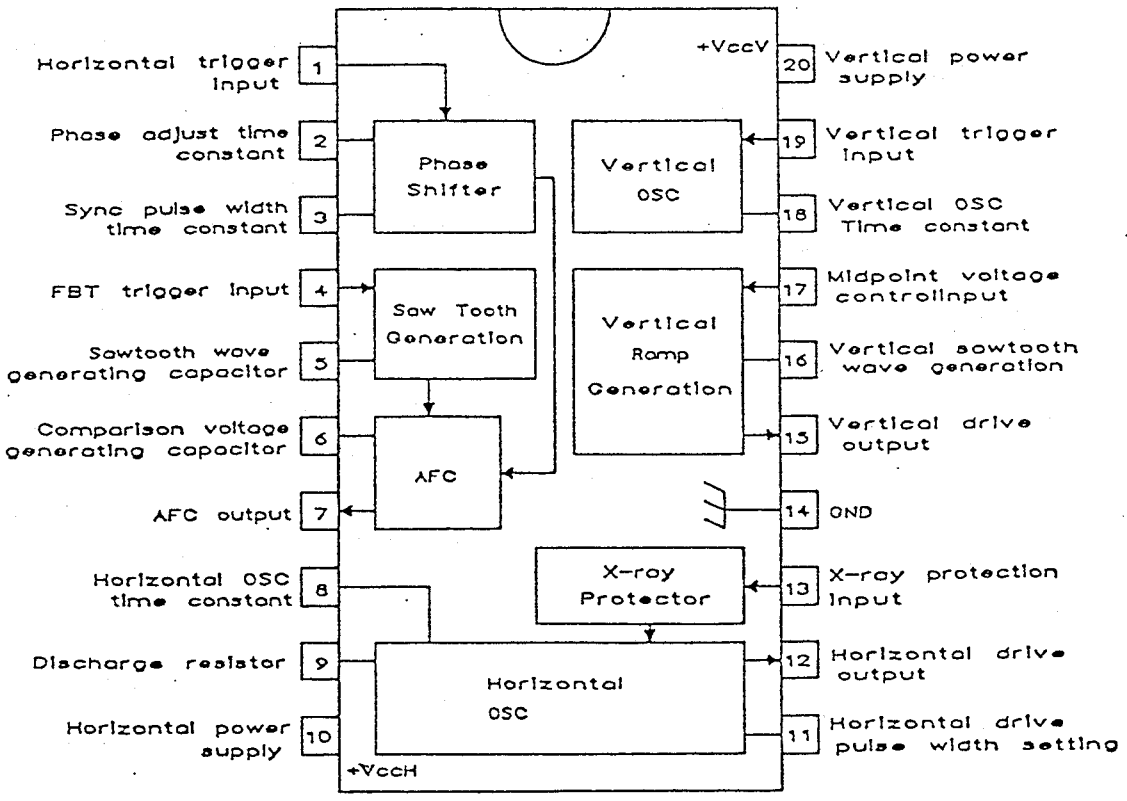
(5) IC304 (9331)



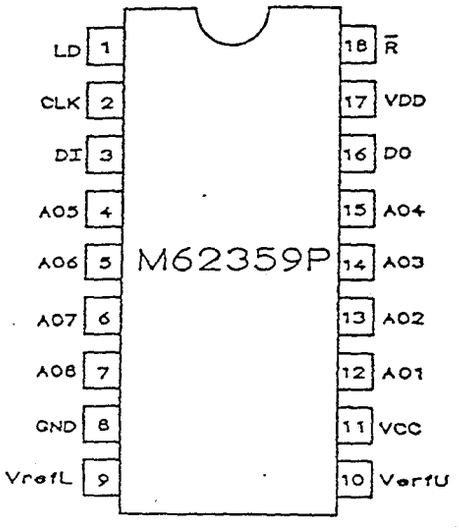
(6) IC307 (4066BC)



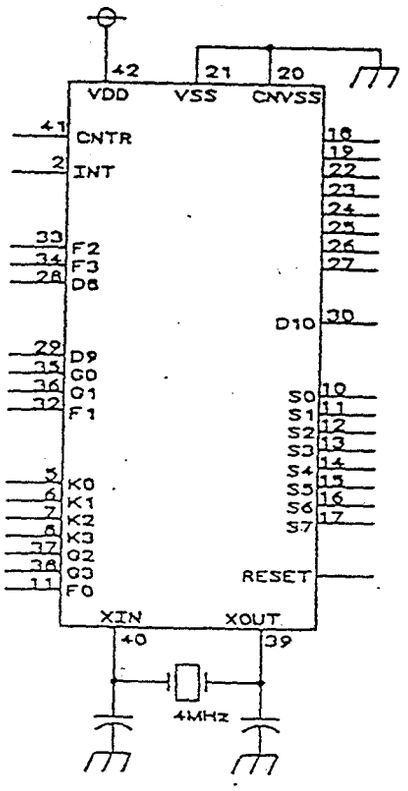
(7) IC305 (7856)



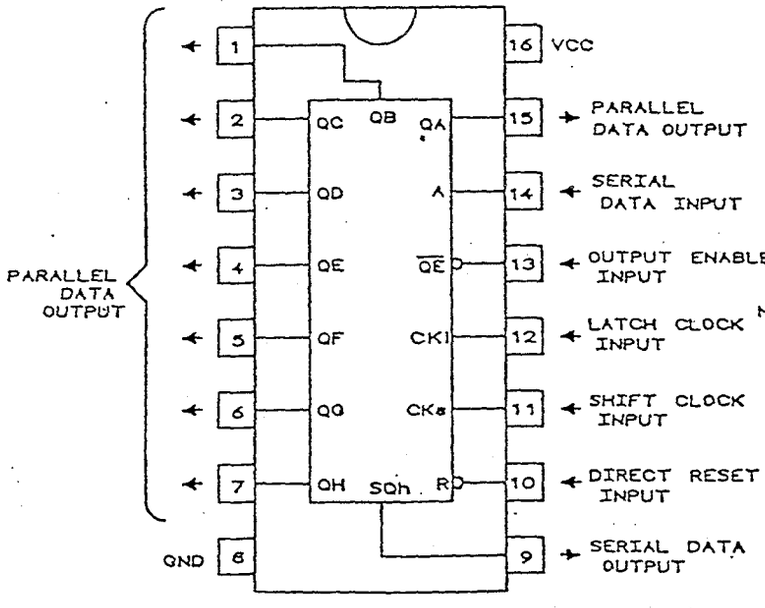
(8) IC504 (62359P)



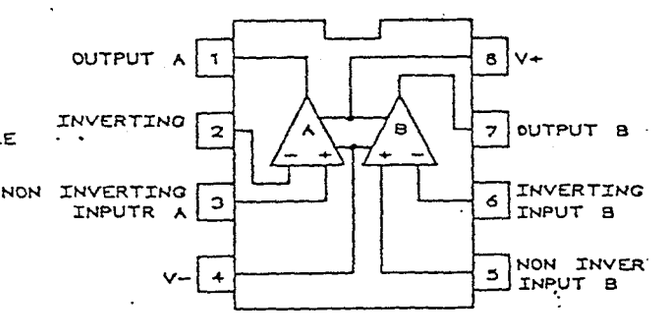
(9) IC503 (M50727)



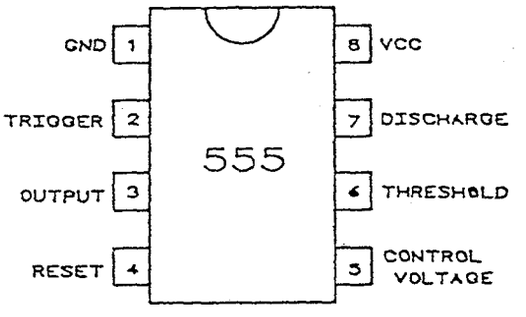
(10) IC502 (M66312P)



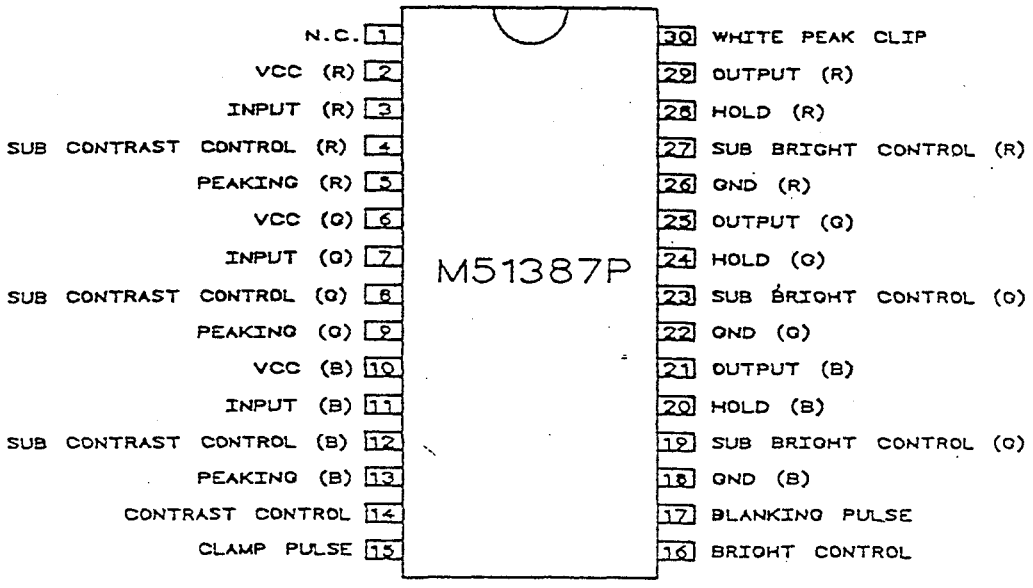
(11) IC106,505 (LM358)



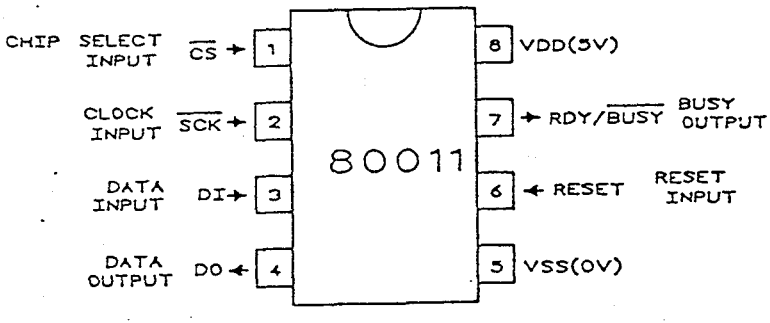
(12) IC202 (NE555N)



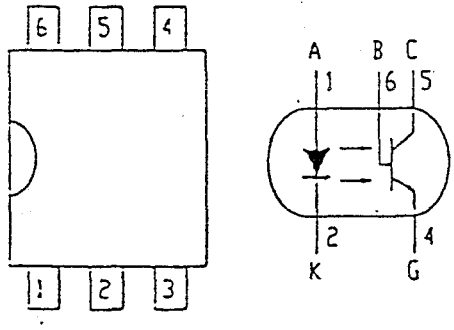
(13) IC601 (M51387P)



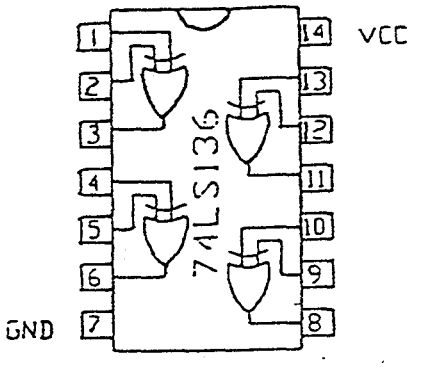
(14) IC501 (80011)



(15) IC104 (4N35)

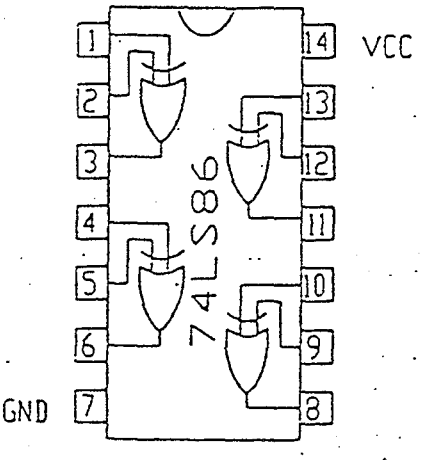


(16) IC701 (74LS136)

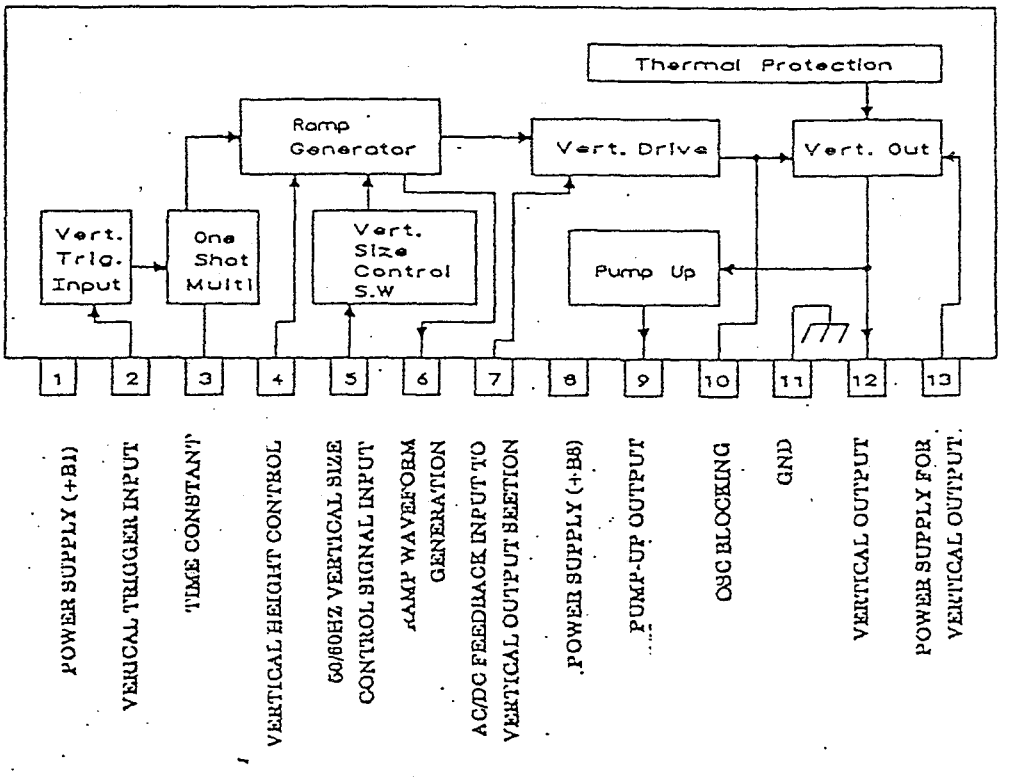


VCC = PIN 14
GND = PIN 7

(17) IC703 (74LS86)

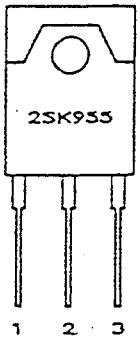


(18) IC201 (7838)



TR

(1) 2SK955

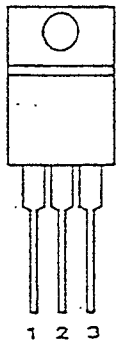


1. Gate
2. Draim
3. Source

(2) 2SA945 2SC1473
2SA733 2SC2705
2SC2001K

1. Emitter
2. Collector
3. Base

(3) 2SK1118

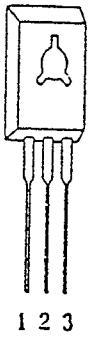


1. Gate
2. Drain
3. Source

(4) TL431

1. Ref
2. Amode
3. Cathode

(5) 2SC2688K
2SD882

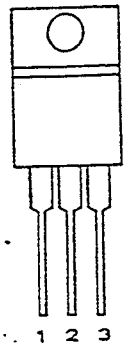


1. Emitter
2. Collector
3. Base

(6) 2SA1145
2SC3468

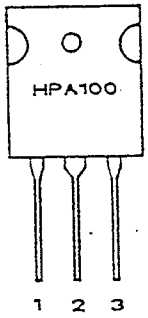
1. Emitter
2. Collector
3. Base

(7) IRF630



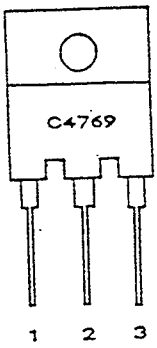
1. Gate
2. Drain
3. Source

(8) HPA-100



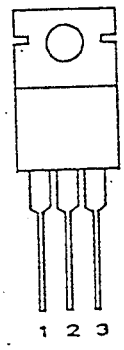
1. Base
2. Collector
3. Emitter

(9) 2SC4769



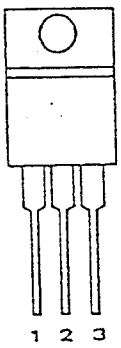
1. Base
2. Collector
3. Emitter

(10) YTF830
2SK357



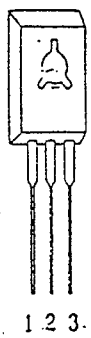
1. Gate
2. Drain
3. Source

(11) 2SC3675
2SD386A



1. Base
2. Collector
3. Emitter

(12) BFQ162
BFQ262



1. Base
2. Collector
3. Emitter

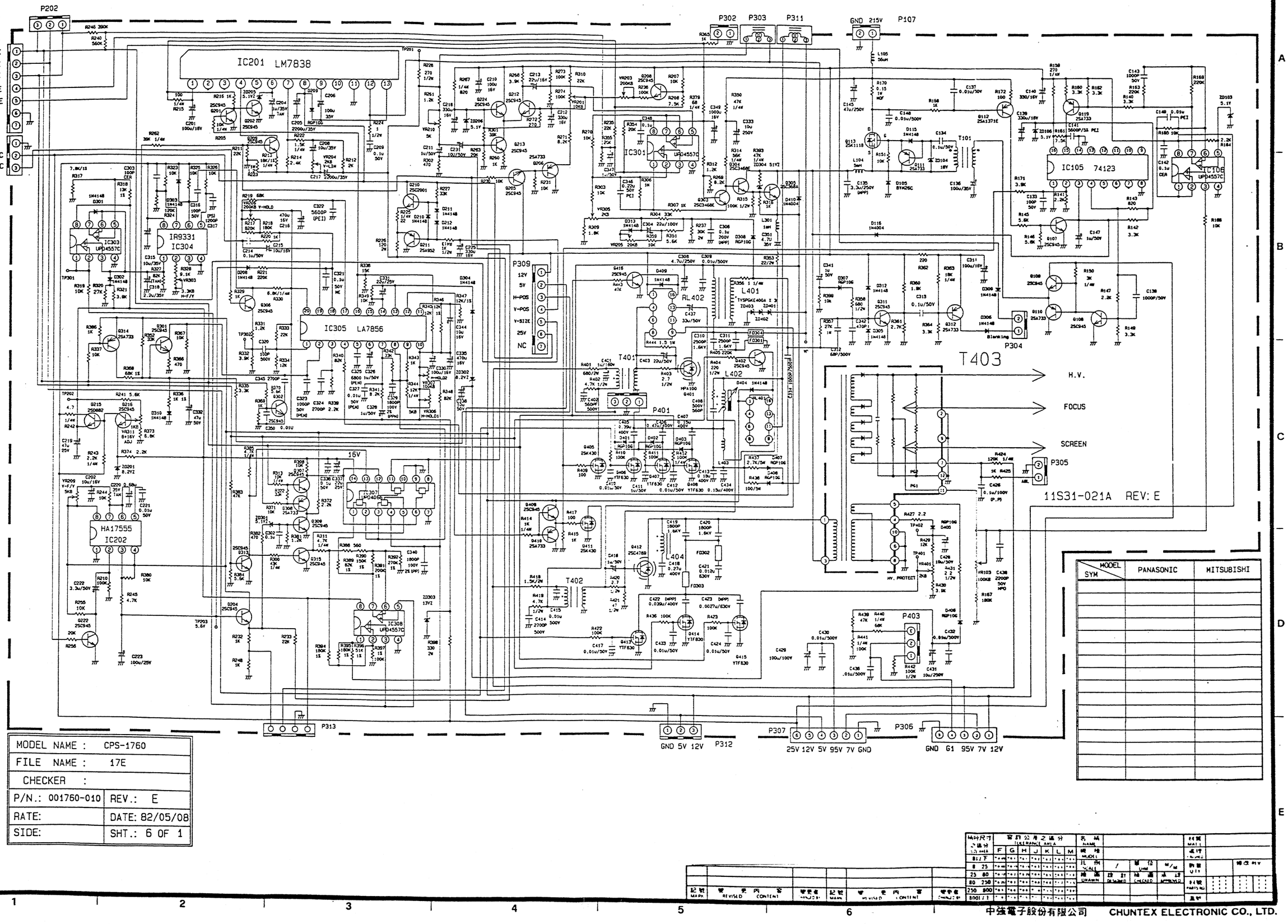
6. ADJUSTMENT

ITEM	ADJUST ITEM	CONTENTS	LOCATION	TEST POINT	SPEC.	INSTRUMENT	SIGNAL	NOTE
1.	VOLTAGE ADJ. & CHECK	<1> 95V ADJUST	VR101	P106	95±0.2V	DIGITAL MULTIMETER	8514NI P1.0	* Before adjusting ,monitor must warm up 10 minutes. * Before adjusting ,EXT SW must charge to SYNC off GREEN.
		<2> 7.3V CHECK		P106	7.3±0.3V	DIGITAL MULTIMETER	8514NI P1.0	
		<3> HOLD DOWN (7.6V)	VR401	TP401	7.6±0.2V	DIGITAL MULTIMETER	8514NI P1.0	
		<4> 26.5V CHECK (HV/ADJ)	VR103	TP402	26.5±0.1V	DIGITAL MULTIMETER	8514NI P1.0	
		<5> 16.0V CHECK	VR311	TP402	16.0±0.05V	DIGITAL MULTIMETER	8514NI P1.0	
		<6> 9.5V CHECK (H-F/V)	VR303	TP301	9.5±0.05V	DIGITAL MULTIMETER	8514NI P1.0	
		<7> 5.6V CHECK (V-F/V)	VR209	TP203	5.6±0.05V	DIGITAL MULTIMETER	8514NI P1.0	
		<8> 25V CHECK		P106	25±0.3V	DIGITAL MULTIMETER	8514NI P1.0	
		<9> 12V CHECK		P106	12±0.2V	DIGITAL MULTIMETER	8514NI P1.0	
		<10> 5V CHECK		P106	5±0.1V	DIGITAL MULTIMETER	8514NI P1.0	
		<11> 215V CHECK		P102	215±3V	DIGITAL MULTIMETER	8514NI P1.0	
2.	H-HOLD ADJ.	H-HOLD (1)	VR306	TP302-GND	PATTERN FLOW SLOWLY	GROUNDING PINCERS	COLOR 64K P1.0	
		H-HOLD (2)	VR307				PS/2-480 P1.0	
3.	PCC ADJ.	PIN ADJ. (1)	VR210R		PIN≦1.5mm MAX. BARREL≦1.0mm MAX.	MASK FIXTURE	COLOR 64K P1.0	
		PIN ADJ. (2)	VR201					
		PIN ADJ. (3)	VR203,VR205					
4.	H-WIDTH ADJ.	H-WIDTH	EXT SW VR305		306mm	MASK FIXTURE	NO	
5.	V-HOLD ADJ.	REMOVE SIGNAL V-HOLD ADJ.	VR206	V-YOKE	76Hz	FREQUENCY COUNTER		
6.	V-LINE	① ADJ. V-CENTER EXT SW TO MAKE PATTERN IN THE CENTER OF CRT.						
		② V-LINE	VR204		PATTERN UP & DOWN SAME SIZE	SOFT METER	8514NI P1.0	
7.	V-SIZE	EXT SW V-SIZE ADJ.	EXT SW		229±3mm			
8.	FOCUS ADJ.	Adj. FOCUS VR to MAKE " m " CLEAR TO SEE.	FOCUS VR		OPTIMUM	TV-2130	SVGIII P6.0 " m "character	

10.	WHITE BALANCE ADJ.	<1> PRE ADJ. & BRIGHTNESS SETTINGS (Befor adjusting, must DEGAUSSING). (A) Setting VR601,602,603,611,612,613 on mechanical center. (B) input VGA-480, 60x60mm white square pattern. The ADJ. SCREEN VR on FBT to make background's brightness at 1～2FL, then adj. VR611,612,613 (BIAS VR) make X=0.281±0.01, Y=0.311±0.01. (C) Input the signal of VGA-400, color bar pattern. (D) To correct SCREEN VR to make the 1st row of color bar pattern (as right figure) visible obscurely (approximate to dark).
		(E) Use PS/2-480 P11.4 (60x60mm ANALOG) and COLOR ANALYZER to adjust VR602 (G) and make brightness about 60FL.
		<2> WHITE BALANCE FINE REGUATION
		<A> Use PS/2-480 P11.4 White Signal.
		<B> To set Brightness VR Min. & Contrast VR Max. then adjust VR601～603 to make X=0.281±0.01, Y=0.311±0.01.
		<C> To set Brightness VR Max. & Contrast VR to make screen's brightness at 1-3FL. The adjust VR611～613 to make X=0.281±0.005, Y=0.311±0.005.
		(D) To check Contrast & Brightness VR to meet above requirements, and take steps B～C, if it is necessary.
11.	BRIGHTNESS SETTINGS	<A) Use PS/2-400 P11.0 Color Signal (EXT BRIGHTNESS & CONTRAST VR MAX.).
		<B> Check color bar (as figure) "2" is visible obscurely.
		<C> Use PS/2-480 (60x60mm ANALOG) brightness should be 45～60FL.
		<D> RASTER BRIGHTNESS≦0.2FL; LR/GS MODEL≧1FL.

Brightness ↓ reduce

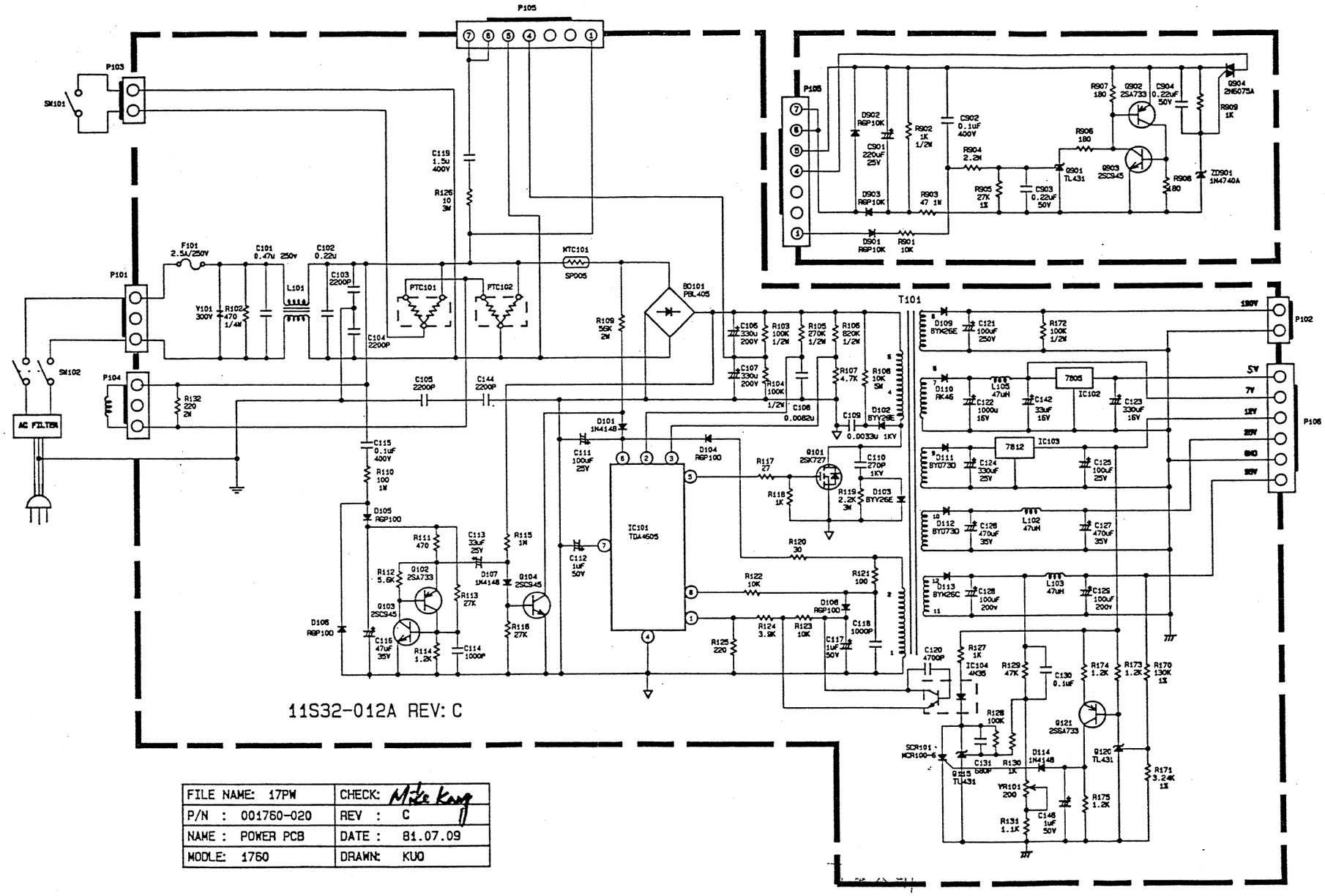
		R+B			B+G	R+G		
	BRIGHT BLUE	BRIGHT RED	BRIGHT PURPLE	GREEN	BLUE + GREEN	RED + YELLOW	WHITE	
15								7
14								6
13								5
12								4
11								3
10								2→visible
9								1→visible obscurely
8								0



MODEL NAME :	CPS-1760
FILE NAME :	17E
CHECKER :	
P/N.: 001760-010	REV.: E
RATE:	DATE: 82/05/08
SIDE:	SHT.: 6 OF 1

SYM \ MODEL	PANASONIC	MITSUBISHI

中強電子股份有限公司 CHUNTEX ELECTRONIC CO., LTD.



11S32-012A REV: C

FILE NAME: 17PW	CHECK: Mike Kang
P/N : 001760-020	REV : C
NAME : POWER PCB	DATE : 81.07.09
MODLE: 1760	DRAWN: KUO

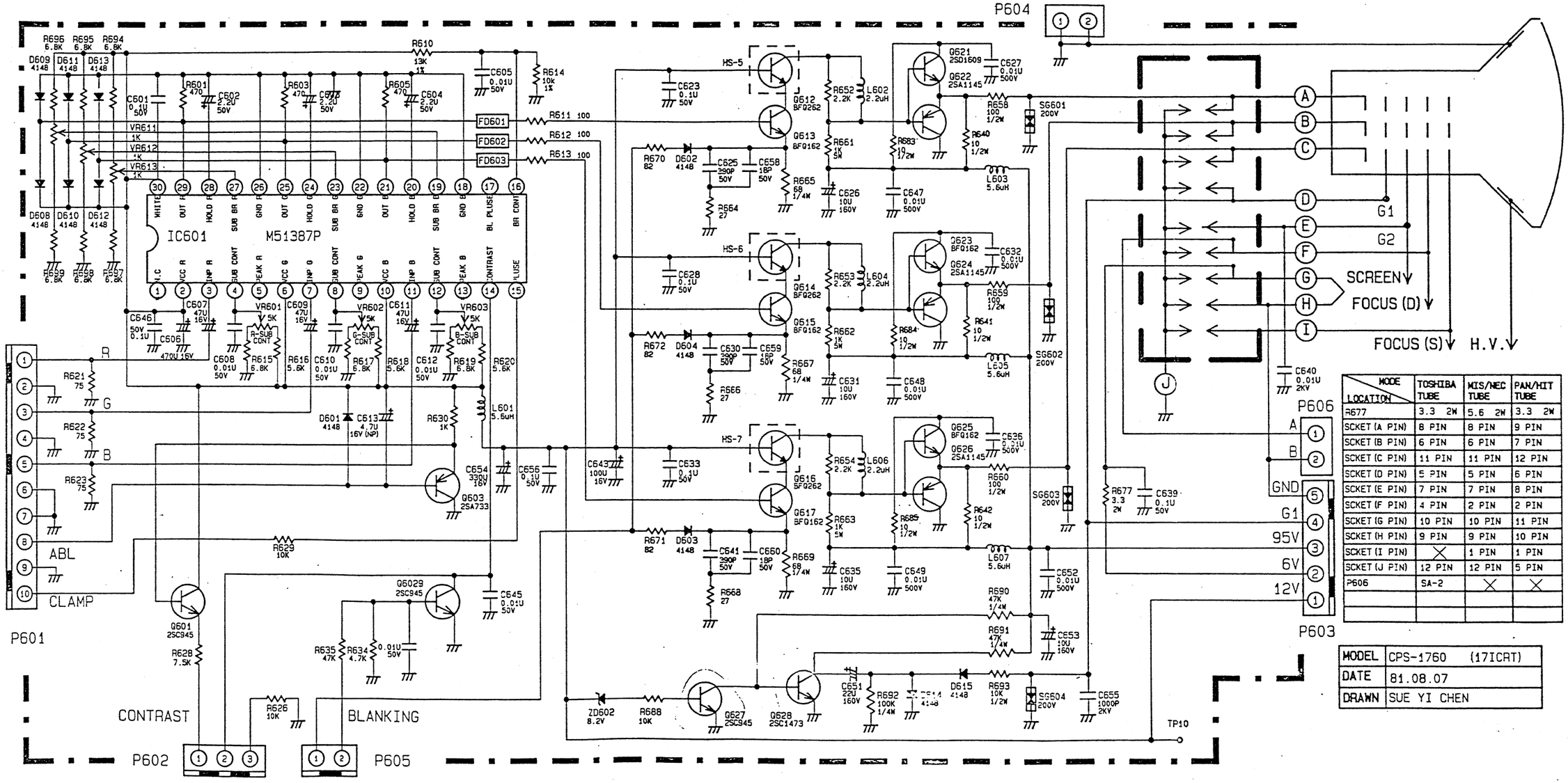
記號 MARK	變更內容 REVISED CONTENT	變更者 CHANGED BY	記號 MARK	變更內容 REVISED CONTENT	變更者 CHANGED BY

標註尺寸之區分 SIZE AREA	容許公差之區分 TOLERANCE AREA F	G	H	J	K	L	M
8以下	±0.05	±0.1	±0.1	±0.2	±0.2	±0.4	±0.4
8～25	±0.05	±0.15	±0.15	±0.3	±0.3	±0.6	±0.6
25～80	±0.12	±0.2	±0.25	±0.4	±0.5	±0.8	±1.0
80～250	±0.25	±0.3	±0.4	±0.6	±0.8	±1.2	±1.5
250～800	±0.5	±0.6	±0.8	±1.0	±1.3	±2.0	±2.0
800以上	±1.0	±1.0	±1.5	±1.7	±2.0	±4.0	±4.0

名稱 NAME					材質 MAT'L		
機種 MODEL					處理 FINISHED		
比例 SCALE	/	單位 DIM.	M/M		數量 QTY		修改 REV.
繪圖 DRAWN	設計 DESIGNED	檢圖 CHECKED	承認 APPROVED		料號 PARTS NO		
					圖號		

第三角法 THIRD ANGLE PROJ.

中強電子股份有限公司 CHUNTEX ELECTRONIC CO., LTD.



MODE / LOCATION	TOSHIBA TUBE	MIS/NEC TUBE	PAN/HIT TUBE
R677	3.3 2W	5.6 2W	3.3 2W
SCKET (A PIN)	8 PIN	8 PIN	9 PIN
SCKET (B PIN)	6 PIN	6 PIN	7 PIN
SCKET (C PIN)	11 PIN	11 PIN	12 PIN
SCKET (D PIN)	5 PIN	5 PIN	6 PIN
SCKET (E PIN)	7 PIN	7 PIN	8 PIN
SCKET (F PIN)	4 PIN	2 PIN	2 PIN
SCKET (G PIN)	10 PIN	10 PIN	11 PIN
SCKET (H PIN)	9 PIN	9 PIN	10 PIN
SCKET (I PIN)	X	1 PIN	1 PIN
SCKET (J PIN)	12 PIN	12 PIN	5 PIN
P606	SA-2	X	X

MODEL	CPS-1760 (17ICRT)
DATE	81.08.07
DRAWN	SUE YI CHEN

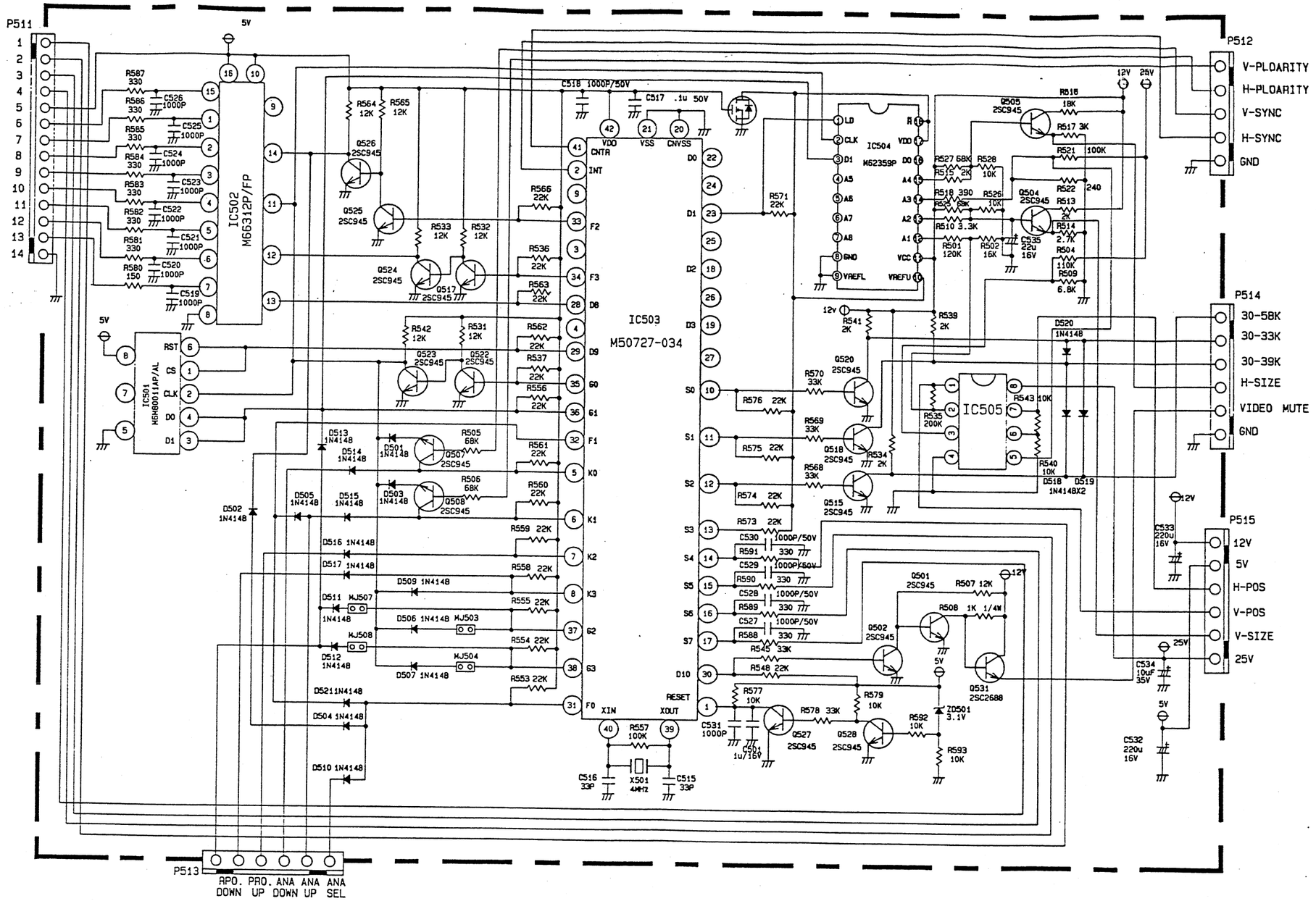
記號 MARK	變更內容 REVISED CONTENT	變更者 CHANGED BY	記號 MARK	變更內容 REVISED CONTENT	變更者 CHANGED BY

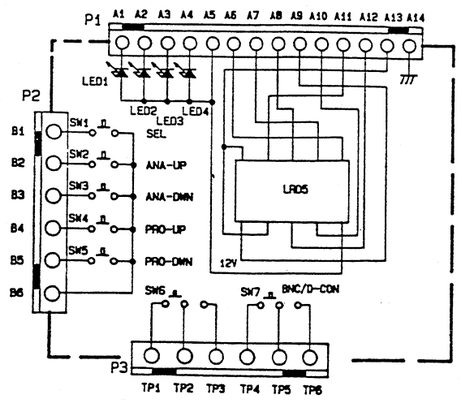
標稱尺寸之區分 SIZE AREA	容許公差之區分 TOLERANCE AREA F	G	H	J	K	L	M
8以下	±0.05	±0.1	±0.1	±0.2	±0.2	±0.4	±0.4
8—25	±0.08	±0.12	±0.15	±0.3	±0.3	±0.6	±0.6
25—80	±0.12	±0.2	±0.25	±0.4	±0.5	±0.8	±1.0
80—250	±0.25	±0.3	±0.4	±0.6	±0.8	±1.2	±1.5
250—800	±0.5	±0.6	±0.8	±1.0	±1.5	±2.0	±2.5
800以上	±1.0	±1.0	±1.5	±1.7	±2.0	±4.0	±4.0

名稱 NAME				材質 MAT'L	
機種 MODEL				處理 FINISHED	
比例 SCALE	/	單位 DIM.	M/M	數量 Q'TY	修改 REV. A
繪圖 DRAWN	設計 DESIGNED	檢圖 CHECKED	承認 APPROVED	料號 PARTS NO	1103-0004
		Kevin		重號	

第三角法 THIRD ANGLE PROJ.

中強電子股份有限公司 CHUNTEX ELECTRONIC CO., LTD.





FILE NAME: 17MIB	CHECK:
P/N :	REV : B
NAME : MICRO	DATE : 82.05.14
MODLE: CPS-1760	DRAWN: KUO

記號 MARK	變更內容 REVISED CONTENT	變更者 CHANGED BY	記號 MARK	變更內容 REVISED CONTENT	變更者 CHANGED BY

稱呼尺寸之區分 SIZE AREA	容許公差之區分 TOLERANCE AREA F	G	H	J	K	L	M
8以下	±0.05	±0.1	±0.1	±0.2	±0.2	±0.4	±0.4
8～25	±0.06	±0.15	±0.15	±0.3	±0.3	±0.5	±0.6
25～80	±0.12	±0.2	±0.25	±0.4	±0.5	±0.8	±1.0
80～250	±0.25	±0.3	±0.4	±0.6	±0.8	±1.2	±1.5
250～800	±0.5	±0.6	±0.8	±1.0	±1.5	±2.0	±3.0
800以上	±1.0	±1.0	±1.5	±1.7	±3.0	±4.0	±6.0

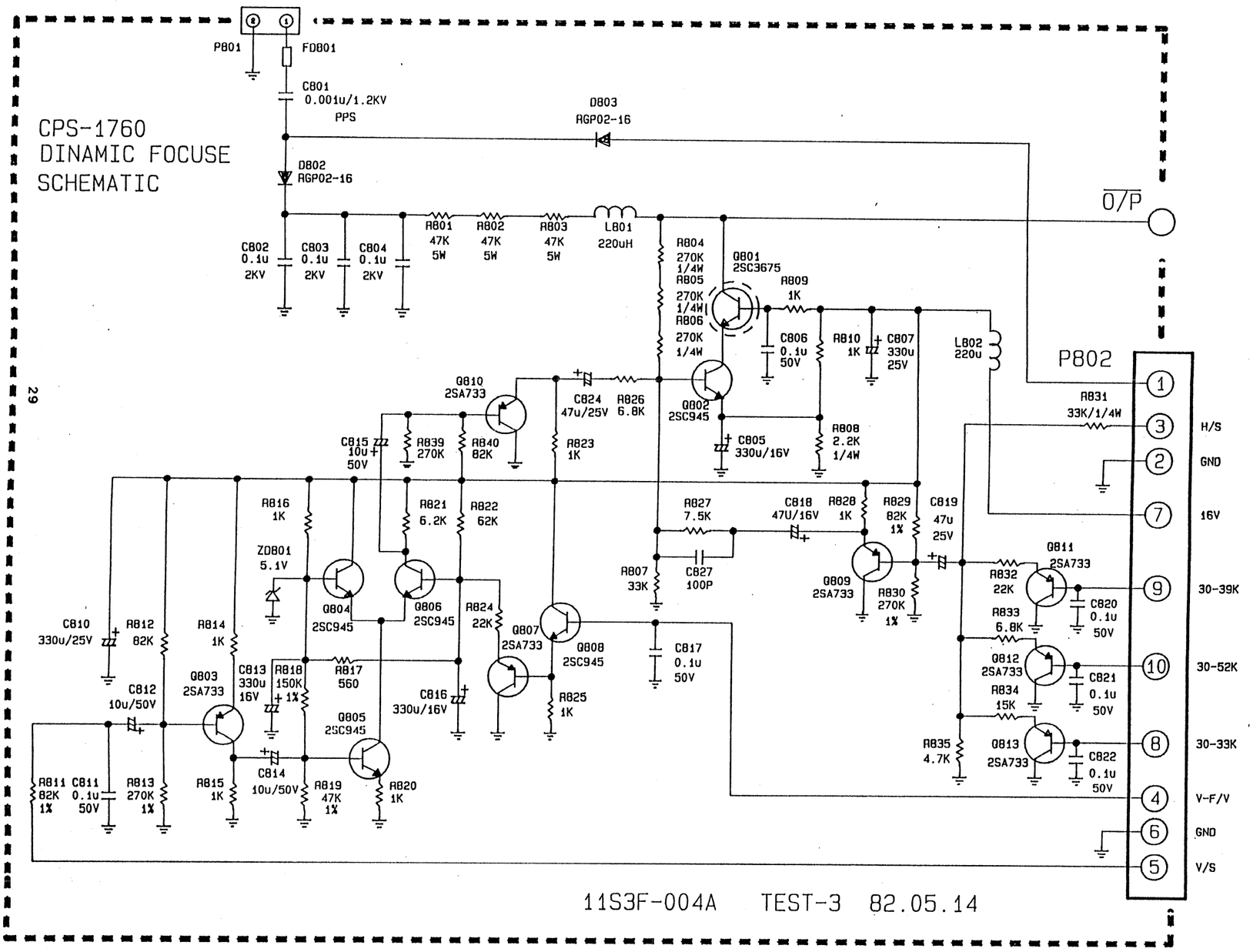
名稱 NAME | 機種 MODEL | 比例 SCALE | 單位 DIM M/M | 繪圖 DRAWN | 設計 DESIGNED | 檢圖 CHECKED | 承認 APPROVED

材質 MAT'L | 處理 FINISHED | 數量 Q'TY | 修改 REV. | 料號 PARTS NO | 圖號

三角法 AGLE PROJ.

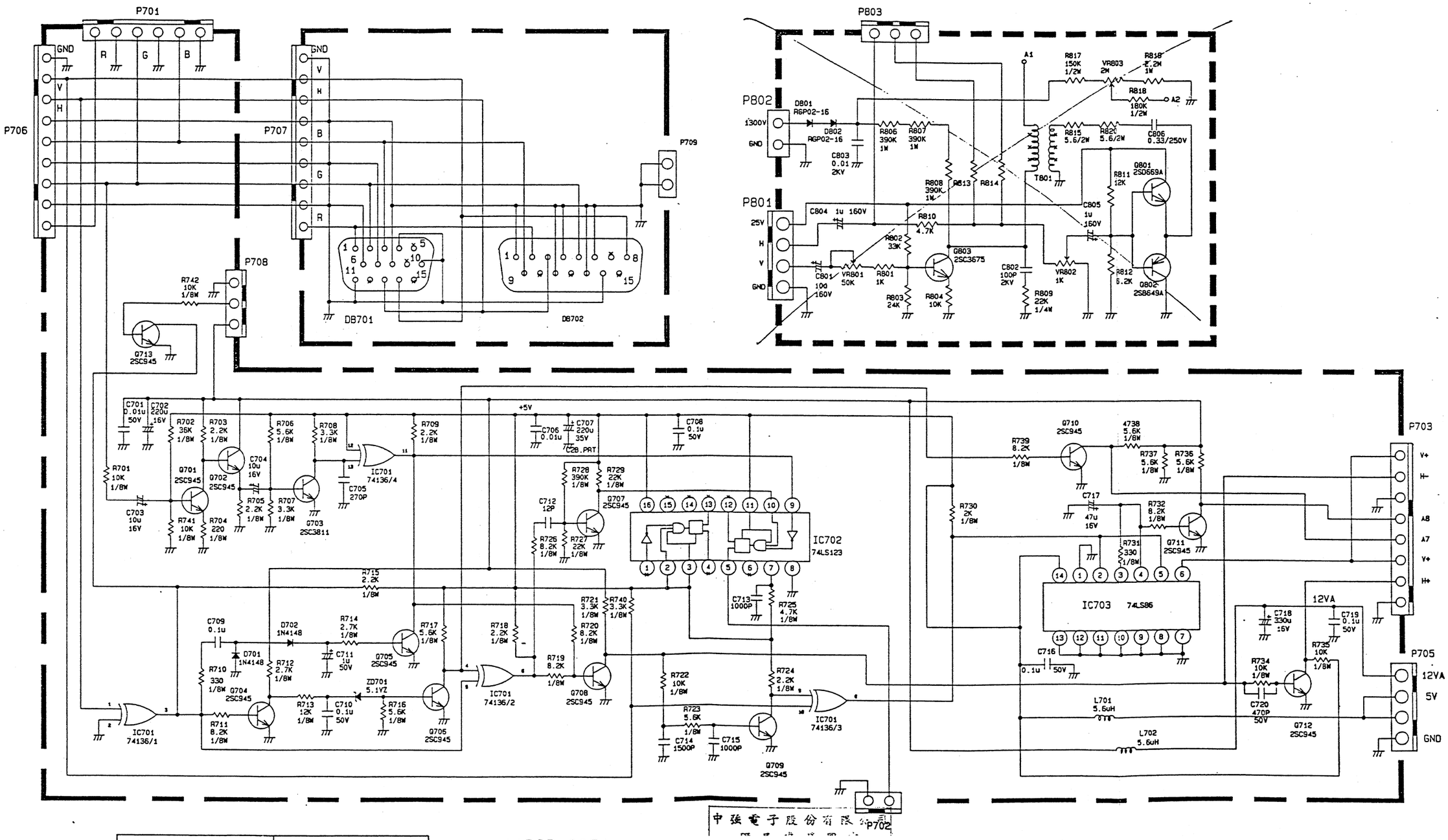
中強電子股份有限公司 CHUNTEX ELECTRONIC CO., LTD.

CPS-1760
DINAMIC FOCUSE
SCHEMATIC



11S3F-004A TEST-3 82.05.14

記號 MARK	變更內容 REVISED CONTEN



FILE NAME: 17IF	CHECK:
P/N : 001760-080	REV : B-2
NAME : INTERFACE PCB	DATE : 81.03.26
MODLE: 1760	DRAWN: KUO

11D3B-005A

記號 MARK	變更內容 REVISED CONTENT	變更者 CHANGED BY	記號 MARK	變更內容 REVISED CONTENT	變更者 CHANGED BY

核准：

稱呼尺寸之區分 SIZE AREA	容許公差之區分 TOLERANCE AREA						
	F	G	H	J	K	L	M
8以下	±0.05	±0.1	±0.1	±0.2	±0.2	±0.4	±0.4
8～25	±0.06	±0.15	±0.15	±0.3	±0.3	±0.6	±0.6
25～80	±0.12	±0.2	±0.25	±0.4	±0.5	±0.8	±1.0
80～250	±0.25	±0.3	±0.4	±0.6	±0.8	±1.2	±1.5
250～800	±0.5	±0.8	±0.8	±1.0	±1.3	±2.0	±2.5
800以上	±1.0	±1.0	±1.5	±1.7	±2.0	±4.0	±6.0

名稱 NAME		材質 MAT'L	
機種 MODEL		處理 FINISHED	
比例 SCALE	/	單位 DIM.	M/M
繪圖 DRAWN	設計 DESIGNED	檢圖 CHECKED	承認 APPROVED
			Jerry
數量 Q'TY		料號 PARTS NO	
圖號		修改 REV.	

第三角法 THIRD ANGLE PROJ.

中強電子股份有限公司 CHUNTEX ELECTRONIC CO., LTD.